

# United States Department of Agriculture

Food and Nutrition Service

Office of Analysis and Evaluation

# **EFT Commercial Infrastructures** and Implications for EBT

TECHNICAL REPORT #2:
AN ASSESSMENT OF THE CURRENT ONLINE DEBIT CAPABILITIES OF FOOD STAMP
AUTHORIZED RETAILERS IN TWELVE
GEOGRAPHIC AREAS OF THE COUNTRY
THROUGH THE APPLICATION OF
GEOGRAPHIC INFORMATION SYSTEM (GIS)
MAPPING TECHNOLOGY

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# **ACKNOWLEDGEMENTS**

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The analysis of the EFT commercial infrastructure is the product of the cooperation of literally hundreds of food retailers, EFT processors, financial institutions, shared regional networks, and equipment manufacturers and vendors. They provided not only essential information on the systems maintained and services offered by their companies but valuable insight on the current and future operation of the on-line debit infrastructure regionally and nationwide. Their willingness to participate in this study underscores the importance of these stakeholders to current and future EBT systems and their commitment to the success of EBT nationwide. While space limitations do not allow us to recognize the many private sector participants in this study, a list of significant contacts is provided as an appendix to this report.

Special recognition is owed to the staff of Benton International and Geosocial Resources, Inc. (GRI) which served as subcontractors to Price Waterhouse under this study. At Benton International, project efforts were directed by Maria Arminio who was assisted by Michael Lloyd and several support staff. Ms. Arminio and her staff brought to this project an understanding of electronic payment systems and the EFT commercial infrastructure that greatly enriched these reports. At GRI, Dr. James Welsh employed highly innovative geographic information systems (GIS) technology to spatially analyze and present data on the on-line debit capabilities of FNS authorized food retailers across the country. Dr. Welsh was assisted by Lixin Yu, who tirelessly compiled, analyzed, and mapped the study data. Both firms added dimensions to this study that could not have been achieved by Price Waterhouse staff alone, making this truly a collaborative effort.

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GLOSSARY

# **GLOSSARY**

Access Device -- See Payment Card.

ACH Debit -- A proprietary off-line debit system established by a retailer. Cards are issued to approved customers and may be used exclusively at that retailer's locations. Settlement is performed through the ACH network.

Automated Clearing House (ACH) Network -- A network run by the Federal Reserve to electronically process funds transfers between member financial institutions. Typically used in a food stamp EBT system to transfer credits from the concentrator bank to financial institutions holding retailer accounts.

Acquiring Bank Processing and Support -- The bank which settles funds between the merchant, merchant acquirer, and the front-end processor each business day. This entity also provides risk management services which detects fraudulent merchant activity.

ATM Deployers -- Depository financial institutions (e.g., banks, thrifts, credit unions) that support proprietary or shared automated teller machines.

Automated Teller Machine (ATM) -- Unattended terminal from which one or more banking transactions can be performed, including balance inquiries, cash deposits, cash withdrawals, transfers between accounts, and payments on loans and credit cards. Requires card access.

Back-End Processing -- Funds settlement and reconciliation functions that follow the transaction authorization process.

Card Issuer -- The organization, typically a financial institution, that maintains the consumer relationship and depository account on behalf of the customer and issues the magnetic stripe card. The latter function is provided by the financial institution itself or a third-party on the financial institution's behalf.

Check Authorization -- The process by which a retailer verifies the authenticity of a check and/or its presenter. Check authorization systems vary in sophistication; four general constructs are presented below.

- Paper "hot" lists which identify all customers who have previously written bad checks in the store. There is no electronic capability in this option.
- In-store negative files tied to the existing scanning systems. The transaction is authorized against a negative file resident at the store controller.
- On-line check authorization against a headquarters central negative or positive file.
- Check authorization databases supported by outside service providers. Check verification is a service which verifies only that there is no record of bad check-writing behavior by the customer. It does not verify that sufficient balance exists to cover purchases or withdrawals.

Controller -- Also referred to as an in-store processor (ISP) or store controller. A computer, usually a PC, that controls the payments system in the store. In an integrated payments system, the controller also routes online debit transactions to the transaction acquirer.

Data Encryption Standard (DES) -- Standard for encrypting data to allow secure transmission of data between two points. In the EBT context, the DES employs a 56 bit key to encrypt the PIN using a Data Encryption Algorithm.

Debit Transaction -- Approval by the cardholder of the debit to his or her account. At the same time, it provides a claim of funds made by the

acquirer (or card acceptor) against the card issuer.

Dial-Up -- A telecommunications configuration whereby a POS terminal connects to a host computer on an as-needed (per transaction) basis. See also Leased Line.

Electronic Benefits Transfer -- An electronic payments system that uses electronic funds transfer, automated teller machines, and point of sale technology for the delivery and control of public assistance benefits.

Electronic Funds Transfer -- Any transfer of funds, other than a transaction originated by check, draft, or similar paper instrument, which is initiated through an electronic terminal, telephonic instrument, or computer or magnetic tape so as to order, instruct, or authorize a financial institution to debit or credit an account.

Electronic Funds Transfer System -- System designed to facilitate the exchange of monetary value via electronic means. Objectives include expansion of time and location availability of basic financial services, and reduction of the present growth of paper volume (i.e., cash and checks).

Electronic Cash Register (ECR) -- An electronic device used at the lane level to record a retailer's sales. An ECR may be either connected with other ECRs in the store to a central processing computer, or stand alone.

Food Stamp Authorized Retailer -- Individual stores and/or corporate headquarters authorized by the food stamp program to accept food stamp benefits toward eligible food purchases.

Front-End Processor -- The entity that manages the telecommunications and terminal management infrastructure which routes electronic transactions from the merchant location to another point, usually the transaction router, for the purpose of transaction authorization.

Front-End Switch -- The entity in the EFT infrastructure that relays transaction information between the merchant acquirer and the customer's financial institution.

Gateway Service Provider -- The entity that allows on-line debit transactions to be supported between and among a network switch, third party processor, EBT processor, or large food retailer. The most common gateway service providers are shared regional networks themselves and the national on-line debit networks (Interlink and Maestro).

Host -- A computer, usually a mainframe, that receives on-line debit transactions from the store level. Transactions are relayed by the host to the network switch, which routes them to the card-issuing bank for authorization.

In-Sourcing — Developing the capability or purchasing services to perform a function "inhouse" rather than contracting with another party.

Independent Sales Organization (ISO) -- An organization, usually contracted by a financial institution, that markets electronic payment services offered by the financial institution.

Integrated Configuration -- An electronic payments system in which the POS terminal, either directly or indirectly, sends to and receives information from the ECR. Two main types of integrated configurations exist:

- Interfaced: POS terminals are connected to a controller by means of a local area network. The controller may also support the ECR system, or is interfaced with the ECR controller. This provides an indirect exchange of information between the ECR and POS terminal in a particular lane.
- <u>Fully Integrated</u>: POS terminals are connected to ECRs in the lane, allowing for the direct exchange of transaction information.

Interchange Fee -- A fee paid by a card issuing bank to a transaction acquirer for an on-line debit or ATM transaction.

Leased Line -- A telecommunications configuration whereby a POS terminal possesses a dedicated connection to a host computer. See also <u>Dial-Up</u>.

Magnetic Stripe Reader (MSR) -- The component of the POS terminal that reads the magnetic stripe card. Occasionally referred to as a "card swipe".

Magnetic Stripe Card -- Benefit access card that contains encoded information on a magnetic strip. The strip may contain three information tracks. Track 2 is used for payments and benefits.

Merchant Acquirer -- The entity that drives or maintains (maintenance may be subcontracted) retailer POS terminals and routes electronically captured transactions to the correct card issuer, third party processor or network switch. Merchant acquirers include:

- <u>POS Merchant Banks</u> -- Financial institutions that act as merchant acquirers.
- <u>POS Retailer Programs</u> -- Retailers that act as merchant acquirers.
- <u>EFT Processors</u> -- Third party processors that act as merchant acquirers. A more comprehensive operational entity than the others, providing both back-end and front-end processing capabilities.

Merchant Bank of Deposit -- The bank that maintains the day-to-day cash management and cash, coin, and currency relationships with a merchant. This entity receives funds from the acquiring bank processor for electronic card activity. This bank may or may not be the acquiring bank depending on whether it supplies acquiring bank EFT services.

Network -- The entity that routes an EFT transaction from the front-end processor to the

card issuing bank. Networks either perform the physical switching of the transaction themselves or outsource the function to another party. Networks are also responsible for the settlement of funds between entities in the EFT infrastructure. See also <u>Switch</u>.

Off-Line Debit -- A payments system in which a magnetic stripe card is used to draw upon a designated depository transaction account. Off-line debit differs from on-line debit in that transaction authorization usually consists of the manual verification of the customer's signature; and from credit in that settlement occurs through the automated clearing house (ACH) network.

On-Line Debit -- Also referred to as POS debit. On-line debit involves the use of a magnetic stripe card at a point of sale terminal to initiate a debit from a customer's demand deposit (checking) account and corresponding credit to the retailer's deposit account.

On-line debit contrasts with off-line debit and credit in that transaction authorization consists of the matching of a customer-entered PIN against a central database, and differs from credit in that settlement occurs through the automated clearing house (ACH) network.

Out-Sourcing -- Contracting out the performance of functions or services rather than performing them in-house.

Payment Card -- The vehicle by which the consumer accesses the EFT infrastructure. Predominantly, the cards have been magnetic stripe-based, and contain information on both the cardholder and type of account. The type of card and the business relationship between the merchant acquirer and the retailer determine the conditions and the timing of reimbursement to the retailer.

Personal Identification Number (PIN) -- An alphanumeric string, typically four characters or longer, used to verify the identity of a cardholder when performing an on-line debit transaction.

Piggybacking or Leveraging -- In the context of EBT, piggybacking refers to the use of the existing on-line debit infrastructure for the initiation, processing, and settlement of EBT transactions.

Point of Sale (POS) Terminal or POS Device — An electronic device used to support the authorization function in a merchant location. At a minimum, the device includes a cardreading mechanism and dial-up telecommunications capability to operate in the payments system infrastructure. More sophisticated POS terminals can be integrated with an electronic cash register (ECR) or personal computer (PC) based system.

Primary Account Number (PAN) -- Number used to identify a customer's bank account. This number is transmitted, along with the PIN and purchase amount, to the card-issuing bank for authorization of the transaction.

Reconciliation -- A message that is generated by the acquirer (e.g., EBT processor) that advises the receiver of settlement information regarding transaction processing between the sending and receiving locations.

Retrofitting -- The modification of existing payments systems to support the EBT application.

Settlement -- The transfer of funds among entities in the EFT environment based on the transactions processed, up to a specified time.

Stand Alone Configuration — An electronic payments system in which the POS terminal(s) can initiate transaction authorization requests and receive responses from a central database without need for connection or support from a controller or ECR.

Stakeholder -- Any entity (e.g., retailer, merchant acquirer, front-end processor, merchant bank of deposit, or acquiring bank) that plays a role in the initiation or processing of an EFT transaction.

Switch -- The entity that routes transactions for authorization from the point of acquisition to the card issuer. See also <u>Transaction Router</u>.

Third Party Processor -- A organization that drives and maintains retailer POS terminals, authorizes and processes transactions, and settles retailer accounts.

Transaction Acquirer -- An entity that drives terminals and terminal systems for the purpose of electronic capture and routing of transactions.

Transaction Authorization -- The process by which approval is given to permit a card or account to be used in a transaction on behalf of the card issuer. An authorization begins as a request that flows through the payment system between the retailer and card issuer, who approves or denies the request. An authorization approval from an issuer represents a promise to pay the retailer, contingent upon compliance with the operating rules and procedures for the transaction.

Transaction Router -- The entity that directs transactions from acquirers to card issuers. It receives transactions from a front-end processor and routes them to appropriate card issuers and other regional and national networks for authorization. The transaction router is responsible for single-point net settlement services (i.e., one net settlement total which includes both debit and credit transactions) for each entity to which it is connected. See also <u>Switch</u>.

# TECHNICAL REPORT #2: THE EFT INFRASTRUCTURE BY REGION

## Introduction

This report presents the results of the nationwide collection of retailer payment systems data conducted under this study. The objective of the data collection was to assess the current on-line debit capabilities of food stamp authorized retailers in twelve geographic areas across the country. These areas were selected for study by the Food and Nutrition Service (FNS) based one or more of the following criteria including, but not limited to: urban and rural components within the area; significant existing EFT infrastructure; cross-border area with multi-state and border store implications; planned or potential EBT pilot project site. As the intended audience for this report includes the FNS Regional Offices, the results of the twelve site data collection are presented by region. The regions in this report correspond to the geographic areas covered by FNS Regional Offices.

The application of geographic information systems (GIS) technology is a significant component of this study. GIS was employed to facilitate the analysis of data collected, and to enable the presentation of the data in a more meaningful manner. Due to the highly technical nature of GIS, a significant portion of this report is devoted to a detailed discussion of the approach and methodology employed under this effort.

Following the discussion of GIS, the report is divided into seven sections (lettered A through G), each corresponding to an FNS region. The sections are presented as follows:

- A. Northeast Region
- B. Mid-Atlantic Region
- C. Southeast Region
- D. Midwest Region
- E. Mountain Plains Region
- F. Southwest Region
- G. Western Region

In addition to describing the general characteristics and trends in each region, a detailed analysis is provided of the one or more "focus" areas selected by FNS for database development and

computer (i.e., GIS) mapping. Data collected in each area includes: makes and models of terminals used to initiate on-line debit transactions; third party processors who perform front-end processing and transaction switching functions for food retailers; and, electronic funds transfer (EFT) networks who support direct debit transactions at the retailers.

Each section opens with a description of the region and study area(s), identifies the EFT networks operating in the region, and notes major supermarket and convenience store chains with online debit. We then focus on the study area(s) by highlighting basic statistics on food stamp authorized retailers with on-line debit capability.

Diagrams of the major configurations of on-line debit payment systems (based on the "service models" introduced in Technical REPORT #1) are provided and include third party processors, company switches or any other entity that participates in the routing of a transaction. Examples range from a single stand alone magnetic stripe reader (MSR)/PIN pad dialing to a third party processor to a multi-lane integrated cash register/electronic payment system running on a local area network (LAN) with the store headquarters switching transactions to the EFT networks. Each description details the on-line debit system and, where applicable, the electronic cash register (ECR) system used by the specific retailer. A discussion of the business and physical relationships between the retailer and the other parts of the EFT infrastructure, such as third party processors and networks is also Each service model is indexed according to the classifications presented in Technical Reopet #1.

Each section closes with a basic assessment of the area's EBT readiness based on empirical data collected and our discussions with key players in the EFT environment. Finally, the color and monochromatic maps created from the databases compiled for each study area are presented within each area's analysis.

# Overview of the GIS Methodology

The following pages present a detailed discussion of the application of GIS technology to correlate on-line debit capable food retailers with the locus of authorized food stamp retailers in each study area. The approach can be describe as a series of steps leading ultimately to the production of a series of color and monochromatic maps describing food retailer POS deployments in each area.<sup>1</sup> These steps are described in the balance of this section as follows:

- Creating the Initial Database
- Merging POS Data
- Basemap Creation
- Geocoding FNS Retailers: Initial Approach
- Geocoding FNS Retailers: Extending the Approach
- Mapping from the Geographic Database

# Creating the Initial Database

The Food and Nutrition Service provided information on Food-Stamp participating retail food outlets in each study area. This extracted dataset included store characteristics, such as food stamp redemptions monthly for a year, reported total food sales, and type of retailer (supermarket, grocery store, etc.). In addition, the file contained address, telephone number, manager's name, and other information necessary to complete the project.

GRI developed this extract into an Xbase database (i.e., as a "dbf" file), a popular format that can be used with many PC-based software packages. This is the file format of the geographic information system (GIS) used for the analysis and mapping (PC ARC/INFO). Several key measures were created from the original dataset. For example, average monthly food stamp redemptions were calculated by summing the redemptions reported over a year and dividing by the number of months between the first and last

The true potential in applying GIS to this analysis, however, extends beyond the static maps presented herein. Indeed, the datasets underlying the maps are rich in information that can support EBT planning with analyses and "what if" scenarios not explored as part of the scope of this study. These datasets, provided to FNS under this study, can be easily updated to reflect changes in the authorized retailer base and POS deployments over time.

months of reported redemptions (most retailer records included eleven months of redemption data so their figures were divided by eleven). This value was annualized and used to calculate food stamp redemptions as a percentage of reported total food sales at each retailer.

# Merging POS Data

The above database was merged with information obtained by Price Waterhouse on the availability of on-line direct debit point-of-sale (POS) devices among food retailers in the study areas. The procedures for accomplishing this merger ranged from simple to complex. At one extreme, no POS capability existed for the Oklahoma site. At the other extreme, GRI developed a complex protocol to identify food-stamp participating retailers from a more inclusive listing of retailers with POS devices. The objective in all cases was to identify all the stores in the original FNS database that have on-line debit capability.

When necessary, the following procedure was used to match a general file of POS-equipped retailer with the FSP retailers in our database. First, the addresses of POS-equipped retailers were "parsed" using PC ARC/INFO. This organizes the components of a street address into predictable locations in a database field. For example, the numeric portion occupies the first six places in the field. Street type designations are standardized: for example, "avenue" or "ave" is rendered as AV. This helps to make the character strings with the address comparable across the two files to be matched. Then a program was written to identify candidate matches between the two files. The program accepted as a match any store in the POS file that matched the name and address of a store on the FNS file for that county. The program then identified cases where the street number portion of the address on the POS file matched the street number portion of an address on the FNS file, provided that either the street name or the ZIP code also matched. Each of those possible matches was examined manually by GRI staff to see if correcting inconsequential spelling or ZIP code errors might yield a match.

Since that procedure could still fail to match stores with transposed numbers, and some other discrepancies, the program was modified to compare the first two words in the store name from the POS retailers file to each word in the store name on the

FNS file. Whenever either of the two words matched any word in the FNS store name, the records were presented on the screen for a manual (human) determination of the matching. This review led to the candidate match being accepted by the reviewer, rejected by the reviewer, or placed on a list to be telephoned for clarification. Finally this manual inspection was extended to cases where the store names were grossly different, but the street number and either the zip code or street name matched. Each such instance was inspected and resolved by staff.

These procedures lead to a high degree of confidence that the distribution of POS devices has been identified for the study areas. As a result of this process, the percentage of FNS authorized food retailers with on-line debit capability was determined for each of the twelve study areas. This percentage varies from a low of 0.0% in the Oklahoma City area (i.e., Oklahoma and Cleveland counties) to a high of 18.5% in the Houston study area (i.e., Harris and Chambers counties.)

# **Basemap Creation**

Spatial analysis and mapping require that street addresses be translated into "real-world" locations identified by coordinates like latitude and longitude. This process is known as "geocoding". It can be accomplished in several ways: For example, to geocode 123 W. Main St. 67890, we can find the 100 block of W. Main and interpolate a position for 123 along the odd-numbered side of the block, using the highest and lowest street number for that block. Or, we could simply place locate 123 W Main St. at the center of its ZIP code, 67890. Obviously, the cost and accuracy will vary under these extreme approaches, and numerous variants are possible under either approach.

Most geocoding involves the first approach, usually employing a digital basemap and a geographic information system (GIS). The digital basemap is an electronic version of a paper map, with much additional information about the various map features. It begins as a set of numbers (coordinates) that identify the starting and ending points of each street in a specific mapping area. GIS software can use those numbers to construct the geometry of a street map, and join to the street lines information about the address ranges on each side of the street. That basemap can be used to electronically match addresses to their real-world

coordinates. The process, however, involves some decision rules. For example, if the address on our file is simply 123 Main St., should we allow it to match the basemap street that contains 123 W Main St.? Should we allow the match only if there is no 123 E Main street on the basemap? Specifying these rules becomes an important consideration affecting the accuracy and the efficiency of geocoding. If the rules are too "loose", we may place the stores at the incorrect locations. If they are too "strict", we may fail to locate too many stores.

Another common problem occurs when the basemap encompasses several communities, each of which may have a Main Street. If the basemap includes the community name or ZIP code, that information can be used to identify which Main Street on the basemap is the one that matches our address. But, when such "tie-breaker" information is missing, it is necessary to introduce more human involvement into the automated processing, to reach a very high matching rate in the geocoding. These considerations affect the choice of basemap datasets and the approach used to construct basemaps.

We developed a basemap for each study area, from the Topographically Integrated Geographic Encoding and Referencing (TIGER) files of the U.S. Census Bureau. These files provide the data necessary to create a street-level basemap for any place in the United States. However, the current version of the TIGER file is somewhat out-of-date. In some areas of the country, guite a few streets are missing from the database, and the information on address ranges is incomplete or missing for some other streets. Importantly, the TIGER file does not consistently link the community's federal code number (FIPS) with all streets in the basemap, and its ZIP code information is sporadic at best. These shortcomings complicate geocoding against TIGER-derived basemaps, but they are compensated by the ready availability of the TIGER file and its adoption as a geocoding base by many other users. Also, at the time we opted for the TIGER file basemap, we expected to have available an improved version (known as the "1992 TIGER") from the Census Bureau. A processing error at the Census Bureau led to a major delay in the release of those files, so we constructed the basemaps with the so-called "postcensus" versions of the file.

Basemaps often include other features that will enhance the cartographic quality of the visual products derived from the electronic information. For example, we developed from the TIGER files a map layer to show the census tract boundaries in the study areas. We also constructed map layers to show city and county boundaries and major highways, by manually selecting the appropriate line segments from an on-screen map, using a GIS. Although tedious to construct, these features add important orientation to those who view the maps.

Geocoding FNS Retailers: Initial Approach

Our approach to geocoding the FNS retailer databases for the study areas evolved during the course of the study. In the end, we were able to locate more than 95 percent of the retailers in the mapped portions of the study areas, accounting for 98 percent of the food stamp redemptions in those areas.

Harris County, Texas was selected as the first site to be geocoded, with the intention of assessing the level of effort and trade-offs associated with various geocoding decisions. experience with the "benchmark" site indicated that considerable intervention in the automated geocoding would be required to achieve a useful matching rate (for example, something over 90 percent). The approach taken in the Harris County geocoding involved the following steps. The addresses were "parsed" using PC ARC/INFO, a popular geographic information system (GIS) software package. As noted above, this process normalizes the components of the address. In addition, PC ARC/INFO creates a "soundex" version of the street name. Matching on the soundex is a standard technique for overcoming slight spelling variations when matching two character strings in an automated system. The parsed addresses were geocoded against the TIGER basemap for Harris County, using PC ARC/INFO. A set of decision rules was adopted to specify which address components had to match to consider the address "located" on the basemap. These rules were set quite conservatively. As a result, many addresses failed to meet the established matching criterion and were subjected to "rejects processing".

When an address fails the automated matching process, PC ARC/INFO generates a score to indicate which components failed the match and information on the reason for failure. For example, it may tell us that several blocks in the TIGER file basemap have about the same degree of match to our address, so a "bestmatch" cannot be found. Or, it may tell us that no such street was found at all. The second step (rejects processing) requires that a person review the matching score generated for each failed case, the reason for the failed match, and the possible candidate matches (from the basemap). Sometimes, it is possible to correct an address error or relax a portion of the decision rules to create a defensible match. Nonetheless, there are many cases where the available information cannot lead to a confident match. In the benchmark, those cases were passed to a manual matching effort. That effort involved the use of an elaborate paper map of Harris County, complete with street address ranges. GRI staff "looked up" each failed case to try to locate it on this paper map. When they did so, the location was manually entered to the electronic database, by finding the corresponding location on a monitor and moving a pointing device to that location. A small program created in PC ARC/INFO's macro language handled the incorporation of that placed store into the main spatial database. When this manual effort failed, we needed to telephone the store to check the address and try to obtain additional information on its correct location. With that additional information, the manual matching process was repeated.

This was a lengthy process. The pre-census TIGER files for Harris county were missing address information in many areas. As an alternative, we used an elaborated version of the TIGER file, the Dynamap 2000 file produced by Geographic Data Technologies. This file includes additional address information and the ZIP code for each street. Using this file and PC ARC/INFO, we still encountered some problems that required human intervention. Of more than 2,500 Houston store addresses, several hundred required some manual effort to locate them and over 100 were telephoned. The result was that only about 30 of the original stores could not be located on the basemap. (This number included stores that could not be reached by telephone.)

Geo	coding:
Ext	ending
the	Approach

The Houston benchmark experience led to concerns about the

basemaps. Although the 1992 TIGER files will include addresses for about 60 percent more households in the nation, they were not ready in time for the remaining geocoding. We processed the full FNS dataset across the remaining study areas, using the available TIGER files, and found about two-thirds matched. Three possible reasons for nonmatches were identified: the FNS address is incorrect, the TIGER file is incomplete or incorrect, or the matching software is not powerful enough to recognize the match. We attempted to ascertain the relative importance of each reason.

That effort required that we find an independent and reliable way to determine whether the address on the FNS file is correct. We did so by comparing those addresses to the official U. S. Postal Service database of all valid addresses in the nation. This 3.8 gigabyte database is available on a CD-ROM disk. Addresses can be matched against that database, using several commercially available packages. We selected the Accumail software to do the matching. Accumail often used to find the ZIP + 4 code for addresses, to qualify for reduced postal rates. It is CASS certified, which means the U. S. Postal service accepts its processing as accurate enough to warrant the reduced rate. We

choice" cannot be determined. That can occur whenever there are several communities in the study area with the same named streets, because the TIGER file has no reliable way to identify the community in which the multiple "Main Street" records occur.

On the basis of this review, FNS agreed to reduce the number of counties to be mapped in some study areas and we extended the original TIGER-based approach to geocoding. In addition to the automated match against the TIGER basemaps, we decided to conduct the following activities. We would verify the accuracy of the addresses on the database. Then we would geocode them to the centroid of their ZIP + 4 code. For the larger supermarkets. we would make a special effort to manually place any that could not be found in this process. Thus, we decided to supplement the TIGER-based geocoding with the major alternative approach: placing an address at the center of its ZIP + 4. This is a highly accurate placement in the urban areas, where virtually every side of every street has its own ZIP + 4 code. In suburban or rural areas, the accuracy of this placement is lower, but it is often the only way to find suburban or rural addresses, where streets either do not have number ranges, or the number ranges have not been included in basemap datasets like TIGER.

First, we selected all the addresses that Accumail identified as failing the match against the U. S. Postal Service's valid address database. We contracted a professional marketing research firm to telephone each store to verify or correct the address. We also included in the telephone verification all supermarkets with monthly food stamp redemptions exceeding \$15,000. \$15,000 in monthly redemptions is relatively low for supermarkets, this threshold was chosen to ensure that all supermarkets with significant food stamp volume would be located. That is, we believed that a special effort to locate these stores would help us to account for a higher percentage of the food stamp activity (redemptions) than the eventual percentage of stores that we matched. We also obtained information on the intersecting streets, to help us locate these supermarkets manually if necessary. This effort extended to about 800 stores across the areas to be mapped.

We were surprised to find that most of the telephoned stores indicated that their addresses were correct on the file. That is,

they again provided an address that failed to match the official U. S. Postal Service 3.8 gigabyte database of valid addresses. We returned to the Accumail processing to discover the reason for this apparent discrepancy. It appears that the "official" database is quite exact. For example, an address on South Kedzie in a Chicago suburb did not match, but eliminating the "South" provided a match. Apparently, the postal service's official designation of the street in that community does not include the direction prefix. In other cases, we found that we could generate a match against the official postal service database by adding the store name to the matching operation. Apparently, the official postal service database uses that information to distinguish the various ZIP + 4 codes for different establishments at the same address, and Accumail needs that information to find a unique match when processing the ZIP + 4 search for which it is designed.

Thus, in a practical sense, the problematic addresses on the FNS database were not incorrect. In the overwhelming majority of cases, they are the addresses by which the establishments are receiving mail. Nonetheless, they do not permit a match against the official postal service list of valid addresses.

Based on these discoveries, we processed the addresses that failed to match the TIGER files in the following manner. First, we manually inspected them to correct addresses based on information obtained in the telephone verification. Then we ran them against the postal service database to identify their ZIP + 4 code. For those cases where a ZIP + 4 was found, we matched the ZIP + 4 against data files licensed from Geographic Data Technologies. Those files provided the latitude and longitude of the centroid of the ZIP + 4, enabling us to add the store to the electronic spatial database. When we failed the above match, we edited the address to (a) remove the direction prefix and (b) add the company name. This resulted in additional matches to the ZIP + 4 database. Those matches were also matched against the centroid files and added to the final spatial database.

For supermarkets with over \$15,000 in monthly redemptions, we attempted to manually locate each store on the map. Given the range of communities involved in the mapped portions of the study area, we used a CD-ROM based street atlas (DeLorme

Street Atlas USA) to find the address on one computer monitor and then place it on our basemap displayed on another monitor (using PC ARC/INFO). This special effort identified all but about a dozen of these larger supermarkets across the mapped areas.

Through these multiple approaches to geocoding, we have located about 95 percent of the retailers in the mapped study areas, allowing us to geographically identify about 98 percent of the food stamp activity (redemptions) in those areas. This geographic database can support a wide range of spatial analysis and mapping projects in the study areas. Because it is created under PC ARC/INFO, it can be readily used across the most popular GIS platforms, including workstation and mainframe versions of ARC/INFO. In addition, it can be viewed and manipulated with a simple, inexpensive Windows-based GIS package, ArcView. The files can be converted for use with other GIS software, and the data associated with the mapped stores can be used in any software that accepts the popular "dbf" file structure.

# Mapping from the Geographic Database

To illustrate the types of maps that can be produced, GRI created a base of twelve monochromatic and four color maps for the mapped portions of the study areas. The sole exception to this rule is the Oklahoma City study area, for which two color and six monochromatic maps were created. Because no food stamp authorized retailers in the study are have on-line debit, mapping opportunities were limited.

Additional monochromatic maps (up to eighteen total) were produced for some of the study areas. This occurred for larger study areas where certain maps benefitted from dividing the study area in up to three parts. Additionally, in several instances, not all of the study area was mapped because the geography encompassed by the study area was too extensive. For example, our mapping of the Greater Atlanta study area was limited to Fulton County.

We have illustrated three basic types of mapping in the accompanying collection. First, we can create maps to show the location of individual stores. The symbols in these "point" maps

can use different size, design, bolding, and color to characterize the differences among retailers in the geographic database. For example, the first two maps in the set show the location of all stores equipped with point-of-sale (POS) devices and all stores without such devices (non-POS stores) in a "wide-angle" view of the mapped area. When viewed at this scale, we can see gross spatial distribution, but we cannot tell much about specific neighborhoods or areas. In addition, it would be almost impossible at this scale to use multiple symbols to show both types of stores on the same map. To do so, at this scale, requires the use of two differentiated colors (see below).

The third and fourth maps in the set provide neighborhood views of the distribution of the POS-equipped and the non-POS stores. There are up to three neighborhood views for any study area. The two maps for each neighborhood use different symbols to characterize the two types of stores in terms of average monthly food stamp redemptions and in terms of the different types of stores.

Point maps allow us to examine individual locations, i.e. individual records from the geographic database. However, this level of detail is often overwhelming. In fact, we can often obtain more useful information by aggregating the individual records in the spatial database. We could, for example, add up the number of POS stores by census tract and then shade a map of census tracts to indicate the number of POS stores in each. That might help us identify regions of the study area that have more or fewer POS stores. However, because census tracts have different areas, that may not help us understand those areas where the concentration of POS-equipped stores is greatest or lowest. Often, it is best to aggregate the points into a regular grid of "cells" superimposed on the map.

By constructing a regular grid pattern for the mapped area, we can use a geographic information system (GIS) to aggregate any variable on any selection of points into the grid cells. For example, we could count the number of POS-equipped stores for each of the grid cells. Or, we could aggregate the dollar value of food stamp redemptions among POS-equipped stores by grid cell. Once we have generated aggregate data for the grid cells, we can

map the grid cells to obtain a gross, but comprehensible picture of the basic distribution of the characteristics of interest.

We illustrate these techniques in the fifth map in the set: a map showing monthly food stamp redemptions in each grid cell (square) as a percentage of the total redemptions in the county. This aggregation produces a more easily understood view of the areas that account for the bulk of food stamp redemptions than we could obtain by mapping individual stores across this vast area. The next map in the set uses the same technique to depict the spatial distribution of POS capacity. It maps the percentage of monthly food-stamp redemptions occurring at POS-equipped stores, for each grid cell. From it, we can see areas where POS stores account for varying degrees of current activity.

The seventh map in the series is a set of up to three neighborhood views that show the type of POS equipment used in that grid cell. The map distinguishes cells that have stores with integrated systems, those with stand-beside systems, those with both systems, and those with neither system.

The grid-cell aggregation technique has certain strengths in displaying a broad view of the distribution of resources such as POS-equipped food stores. But is has some clear limitations as a spatial modeling technique. The most important, perhaps, is the difficulty in visualizing the extent of the influence of the characteristic that is mapped. For example, if we aggregate food stamp redemption volume for all the POS-equipped stores, it is still difficult to imagine how "available" that resource is to people living in proximity to those stores.

The problem of modeling the availability of a resource across space is a longstanding concern of geographers and marketers. Over sixty years ago, they began to develop an approach to this problem that can today be implemented through GIS. GRI has developed an implementation of that approach that can run on a personal computer. We used this implementation to create the eighth, ninth, and tenth maps in the series. The approach developed nearly a half-century ago is called "gravity modeling". It imagines that the availability of a resource (a bank's ATM machine, a shopping center, a food store, a day care center, a hospital x-ray department, etc.) decreases for people who live

increasingly far from the resource. It models this declining availability in a fashion that parallels gravitational influence: the availability of the supermarket (for example) is based on (a) how big its is and (b) how near its is. The greater the number of stores, the nearer the stores, and the larger the stores, the greater the "availability" of food stores to any location on the map.

With this notion, we can construct a map using a very tiny grid pattern that approximates a continuous surface. For each area on the grid, we aggregate this number for all stores of interest: volume / distance <sup>2</sup>. This number will be larger as the volume of stores in proximity to that cell increases. It will also be larger as the distance to the stores decreases. If we do this for all cells across the map, we can create a "response surface" or a "potential surface" map of the area. By shading the cells, we can identify areas where the modeled resource is highest and where it is lowest. We constructed such models and derived maps from them to depict the distribution of POS-equipped food stores in the eighth map of the series. Brighter areas are those where the availability of such stores is higher. Our grid pattern superimposed 10,000 cells on the map area.

In the ninth map, we constructed the same model for all the other stores, those without POS equipment. The prior map showed areas that are better and worse covered at present. That might be helpful in deciding upon an area for an EBT pilot project. The ninth map shows those areas that still require effort to develop POS capacity. It might be more helpful in planning a full implementation of EBT. The tenth map combines these two in an interesting way. We divided the POS availability measure for each place on the map by the NPOS availability measure for that place. The bright areas in the resulting model shows areas that have considerable NPOS food stamp redemptions and are not near some other stores that provide a POS alternative. Under some circumstances, we might imagine the use of such information to guide pilot efforts. (For example, it helps in studying the use of POS and NPOS stores by food stamp clients living near both.)

Another view of issues potentially important to EBT is provided in the eleventh map of the set. Limiting the view to supermarkets, the map shows those that are above and those below the criterion of fifteen percent of total food sales being derived from food stamp redemptions. Overall, the map isolates some of the "major players" (supermarkets) in the study area. The last monochromatic map shows for those over the fifteen-percent threshold, which stores currently have full, partial or no satisfaction of the lane coverage requirements that will be part of EBT implementation. (It should be noted, however, that this information is provided to illustrate a use of the geographic database. The data on redemptions were not gathered at the same time as the data for total food sales.)

Four additional maps illustrate the value of color in such mapping. The first color map shows POS and non-POS stores for a wide-angle view of the mapping area, on the same map. Without color to differentiate the two types of symbols, it is virtually impossible to place this many stores on a single map. The remaining color maps reproduce the eighth, ninth, and tenth, monochrome maps: they are color versions of the potential surface mapping technique. The use of color helps us to differentiate the store locations against the zones of availability calculated from them.

Although this collection illustrates three major techniques for displaying the information in the geographic database, there are many other approaches to the analysis and display of such information. Thus, it is worth repeating that the value of the derived spatial database extends well beyond the specific maps contained in the report.

The remainder of TECHNICAL REPORT #2 presents the data on debit equipped food stamp authorized retailers by FNS region of the country.

The following table summarizes this data, by including statistics on:

- percentage of food stamp authorized retailers in each study area with on-line debit;
- percentage of the study area's food stamp redemptions that these retailers account for; and
- percentage of those retailers with on-line debit that satisfy FNS requirements for level of terminal deployment. The requirements are based on the type of retailer (supermarket, convenience store, etc.) and the retailer's current level of food stamp redemptions.

The requirements, as set forth in 7 CFR section 274.12(g)(4)(ii) are:

- if a retailer's average monthly food stamp redemptions are greater than 15 percent of total food sales, then the retailer, regardless of type, is required to equip all lanes with POS terminals;
- if the retailer's average monthly food stamp redemptions are less than 15 percent of total food sales, and the retailer is a supermarket, then for every \$11,000 in food stamp redemptions, the retailer must equip one lane, up to the number of lanes in the store; or
- If the retailer's average monthly food stamp redemptions are less than 15 percent of total food sales, and the retailer is <u>not</u> a supermarket, then for every \$8,000 in food stamp redemptions, the retailer must equip one lane, up to the number of lanes in the store.

The study areas are ordered by level of terminal deployment.

# **Summary Table of Major Descriptive Statistics**

Study Area	Percent of FSP stores with debit	Percent of FS redemptions accounted for by these stores	Percent of stores with debit meeting FNS deployment requirements
Houston, TX	18.5%	41.2	99.1
Des Moines, IA	18.3	50.6	100.0
New Castle Co., DE	12.3	63.9	91.9
SE New Hampshire	12.2	66.3	100.0
San Bernardino, CA	10.0	29.1	96.2
St. Louis, MO	9.0	47.9	84.7
Greater Atlanta	7.7	28.2	100.0
Charleston, SC	4.9	0.5	92.9
Essex County, NJ	3.7	30.5	100.0
Cieveland, OH	3.6	28.4	95.4
South Chicago	2.7	13.1	99.0
Oklahoma City	0.0	0.0	N/A

# A. NORTHEAST REGION

The FNS Northeast region consists of the six New England states plus New York. One FNS-selected study area, the southeastern New Hampshire study area, is located in this region. The major EFT networks operating in the study area and switching on-line debit transactions are NYCE, MAC, and Yankee 24<sup>2</sup>. MAC is the dominant network in the southeastern New Hampshire area. All retailers with on-line debit accept



MAC cards. Connecticut-based Yankee 24 and New Jersey-based NYCE both have a presence in southeastern New Hampshire but this presence is generally limited to larger retailers. Table A.1 lists fees for these three networks.

Table A.1

Network	Fee			
NYCE	\$.06, switch fee split between issuer and acquirer			
MAC	\$.045-\$.10, switch fee split between issuer and acquirer			
Yankee 24	\$.04 switch fee paid by issuer, \$.04-\$.06 switch fee paid by retailer			

# Research Methodology

Our data collection effort in this study area consisted of:

 contacting each major EFT network operating in the study area (NYCE, MAC, Yankee 24) to obtain a list of retailers accepting the network's debit cards;

<sup>&</sup>lt;sup>2</sup> NYCE and Yankee 24 are merging at this writing. The new for-profit processing company will begin operations in the second quarter of 1994.

- using these lists, along with a list obtained from FNS of food stamp authorized retailers in the study area, to construct a database of all food stamp authorized retailers in the study area accepting debit cards for purchases; and
- contacting each retailer on this list for a description of the service model used to initiate on-line debit transactions.

# Micro Focus Southeastern New Hampshire

The southeastern New Hampshire study area consists of Hillsborough, Rockingham, and Strafford Counties. This area contains the cities of Dover, Manchester, Nashua, and Portsmouth.

Major food stamp authorized retailers in the study area with online debit include:

- Shop 'N Save
   Purity
  - Demoulas/Market Basket

As of September, 1993, fifty-five of 452 food stamp authorized retailers in the study area accepted debit cards for purchases. This information is illustrated in Figure A.1.

Of the 55 retailers accepting debit cards in the three county area, 60 percent (33 of 55) are supermarket chain stores (Shop 'N Save, Demoulas/Market Basket, or Purity Supreme). The remaining forty percent are small grocery stores or gas station/convenience stores.

Our research indicates that all but one of the major supermarket chains in the southeastern New Hampshire study area, Shaw's Supermarkets, accept debit cards for purchases. Shaw's is a major retailer in four New England states with 13 stores in the study area. The company currently has on-line check verification and began offering on-line debit services in early 1994.

Multi-store retailers not offering debit are mostly convenience store chains. They include:

# Common Service Models Encountered

Smaller retailers in the southeastern New Hampshire study area with on-line debit usually obtain services through their bank. In most cases, this bank is First NH. First NH arranges for the retailer to lease a VeriFone Tranz 330 terminal for a fee of @\$35-\$45 per month. Retailers are charged 31 cents per transaction. This transaction fee is separate from any switch or interchange fees paid by the merchant acquirer to a network or card issuing bank.

# STORE LEVEL BYTESSTORE BYTESSTORE LEVEL BYTESSTORE LEVEL BYTESSTORE BYTES-

Figure A.2

First NH is in the process of switching its on-line debit processor. Currently, BUYPASS handles transaction routing. However, on November 1, 1993, all retailers signing up for First NH's on-line debit program began sending transactions through First National Bank of Omaha. Retailers currently using BUYPASS as their third party processor continue to do so.

This scenario, illustrated in Figure A.2, corresponds to common service model option 2 described in Technical Report #1, Section F. Here the retailer initiates the transaction using a VeriFone Tranz 330 terminal. The terminal dials up to a third party

processor (either BUYPASS or First National Bank of Omaha) who sends the transaction on to the EFT network (either MAC, Yankee24, or NYCE).

Another common service model is found in convenience stores that also sell Mobil brand gasoline. Mobil has developed an electronic payments service in which it processes transactions for 9,000 dealers nationwide. These dealers lease terminals from the company for a monthly fee. Debit transactions are free to the retailer. The make and model of the leased terminals varies; in southeastern New Hampshire, the most common terminal type is a Datacard Datatrol 360.

Mobil drives all terminals using a switch located at the company's credit headquarters in Lenexia, KS. Transactions are routed to 17 networks either directly or through a third party processor. For example, the company routes Honor transactions directly to the network. However, Yankee 24 and MAC transactions are sent to Mellon Bank, which then relays them to the networks.

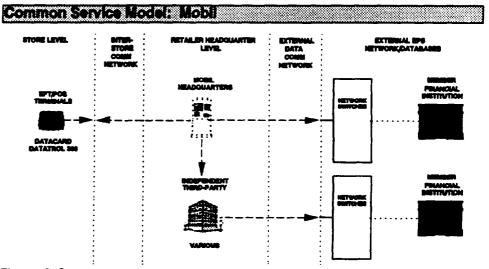


Figure A.3

The Mobil scenario, corresponding to common service model option 3, is diagrammed in Figure A.3. A transaction is initiated at the retailer level and sent to company headquarters. Mobil in turn relays the transaction on to a third party processor or directly to the network.

Large supermarket chains in the southeastern New Hampshire study area have more complicated systems at the store level. Demoulas, for example, equips its stores with NCR 4430 MSR/PIN pads integrated to an NCR 2126 or 2127 cash register system. The ECRs are connected to a front-end "master register" which sends all debit transactions to a processor in the back of the store. This computer relays transactions to a central processor at company headquarters in Tewksbury, MA. Transactions are then routed to BUYPASS for switching to the networks. Figure A.4 illustrates this scenario, which corresponds to common service model option 2.

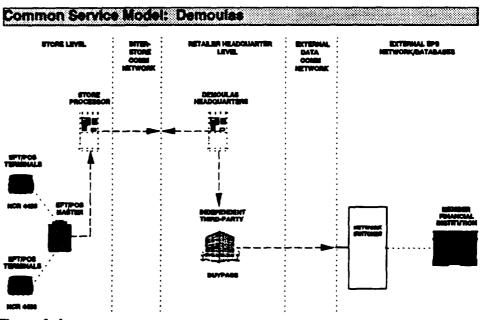


Figure A.4

Shop 'N Save stores are located in western Maine, northern Massachusetts, eastern New York State, and throughout Vermont and New Hampshire. These stores accept MAC, NYCE, and Yankee 24 cards at all locations. Shop 'N Save deploys International Verifact (IVI) T3L MSR/PIN pads in a stand-alone

configuration. The terminals are connected to an IBM PC controller in the back of each store. Transactions are sent directly to Deluxe Data Systems, which acts as a gateway for both debit and credit. The scenario, illustrated in Figure A.5, corresponds to common service model option 2.

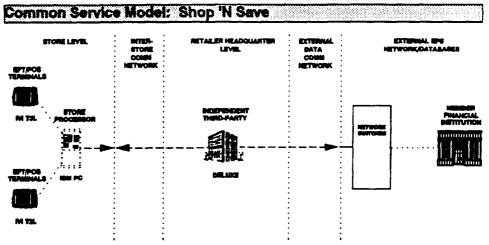


Figure A.5

For on-line debit, Purity Supreme uses common service model option 3. Purity equips individual stores with IVI T3L terminals in a stand beside configuration. These terminals are connected to a Fujitsu/ICL FX controller which sends transactions to the host computer located at company headquarters in Billerica, MA. All XPress 24 and MAC transactions are routed through BUYPASS, while Deluxe Data Systems handles Yankee 24 transactions. Purity switches NYCE transactions directly to the network. Figure A.6 on the following page illustrates this scenario.

As previously mentioned, Shaw's began offering on-line debit in early 1994. Stores use IVI V2000 SL MSR/PIN pads integrated into the existing Sweda AURO 6000 ECR system. Shaw's drives its own terminals using a proprietary switch and Deluxe Data Systems provides a gateway to the networks.

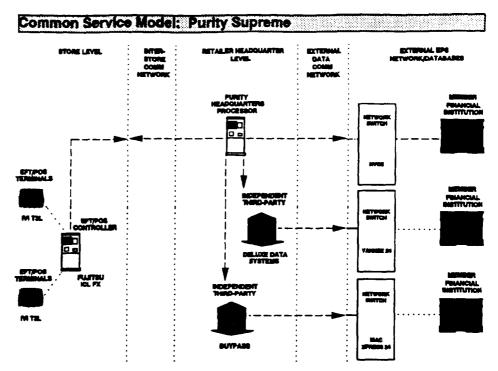


Figure A.6

EBT Readiness in Southeastern New Hampshire

As was mentioned previously, 12.2 percent of food stamp authorized retailers accept debit cards for purchases. This number places the southeastern New Hampshire study area fourth among the twelve study areas with regard to level of terminal deployment. The 55 retailers account for 66.3 percent of food stamp redemptions in the study area. This information is illustrated in Figure A.7.

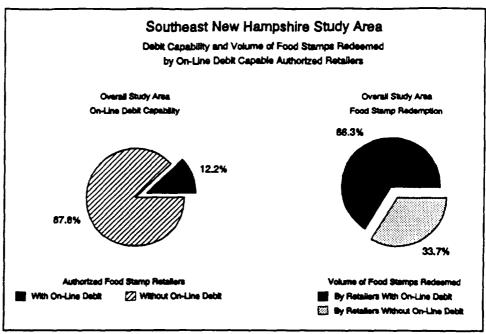


Figure A.7

Of the twelve study areas, New Hampshire's on-line debit equipped retailers account for the largest percentage of food stamp redemptions. Such a high number (66.3 percent) has positive and negative implications. As a plus, a smaller investment in terminals will be required to serve a greater number of food stamp recipients. However, 60 percent of the retailers with on-line debit are supermarkets with complex electronic payment systems. Consequently, additional time and money may need to be spent to design, write and test EBT-specific software applications.

Table A.2 shows retailers by volume of food stamp redemption and level of terminal deployment.

Table A.2

Retailer Type	Level of Deployment <sup>1</sup>			
	Full	Part	None	Total
А	1	0	26	27
В	37	0	32	69
С	17	0	339	356
Total	55	0	397	452

#### Legend

- Avg. Monthly FS sales > 15% total food sales = all lanes must be deployed. All retailer types.
- B: Supermarkets: Avg. monthly FS sales < 15% total food sales ⇒ one terminal for each \$11,000 in monthly FS volume up to # of lanes in store.
- C: All others: Avg. monthly FS sales < 15% total food sales ⇒ one terminal for each \$8,000 in monthly FS volume up to # of lenes in store.

It is interesting to note that of the 452 food stamp authorized retailers in the study area, only 27 are "type A" retailers; i.e. those which redeem at such a volume as to require deployment of terminals in all lanes. In addition, 356 of 452 (78.8 percent) retailers type C, which are non-supermarkets requiring one terminal for each \$8,000 in monthly food stamp redemptions. These two facts suggest that the cost of providing retailers with terminals for EBT will be lower than for an area such as Houston (see Section F) which has more type A and fewer type C retailers.

Shaw's only began offering on-line debit in the beginning of 1994, which excluded them from the initial analysis of on-line debit in the study area. Therefore, it would be interesting to include them in the total of on-line debit capable retailers in the southeastern New Hampshire area. With the 13 Shaw's stores in the southeastern New Hampshire area included, the number of retailers with on-line debit increases to 68, or 15 percent of all food stamp authorized retailers. What is even more interesting is that the 68 retailers account for more than 79 percent of food stamp redemptions in the study area. These results are illustrated in Figure A.8.

<sup>1</sup> Retailers fully, partially, or not at all meeting the regulatory requirement for terminal deployment as set forth in 7 CFR \$274.12(g)(4)(ii).

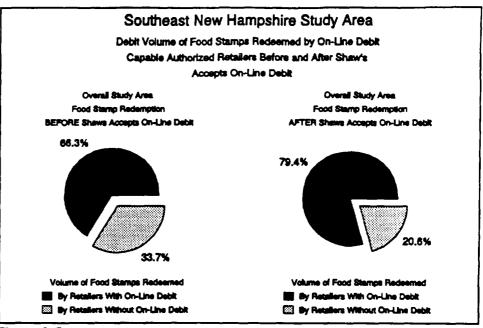


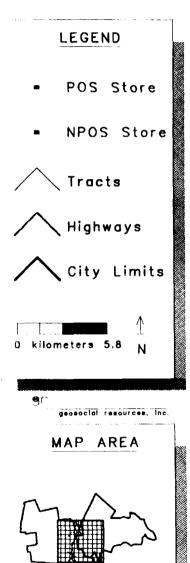
Figure A.8

#### Maps

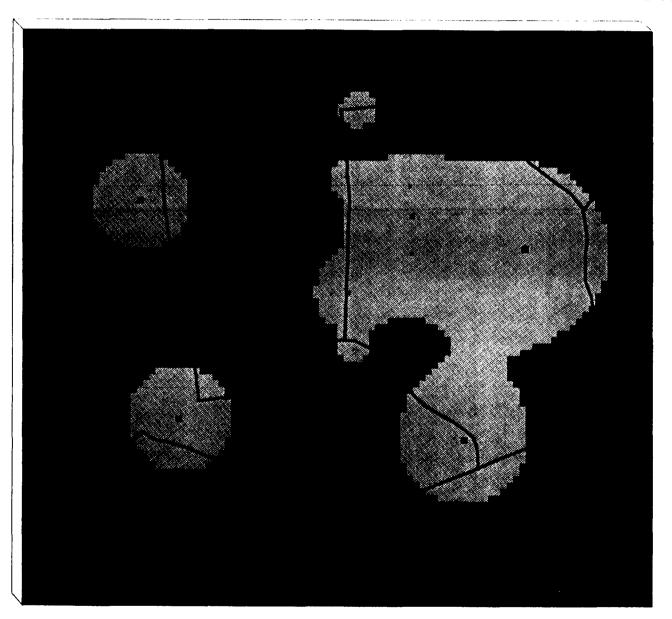
Immediately following this page are presented four color and fifteen monochromatic maps for this study area. The content and views depicted are described generically in the introduction to this report.

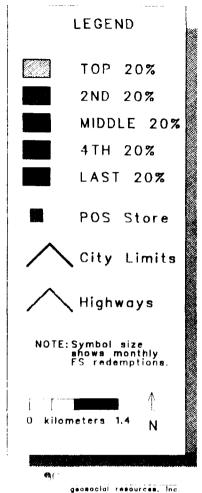
POS, Non-POS Retailers in FS Program: Manchester/Nashua and Environs

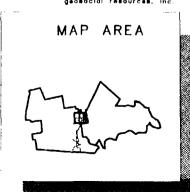




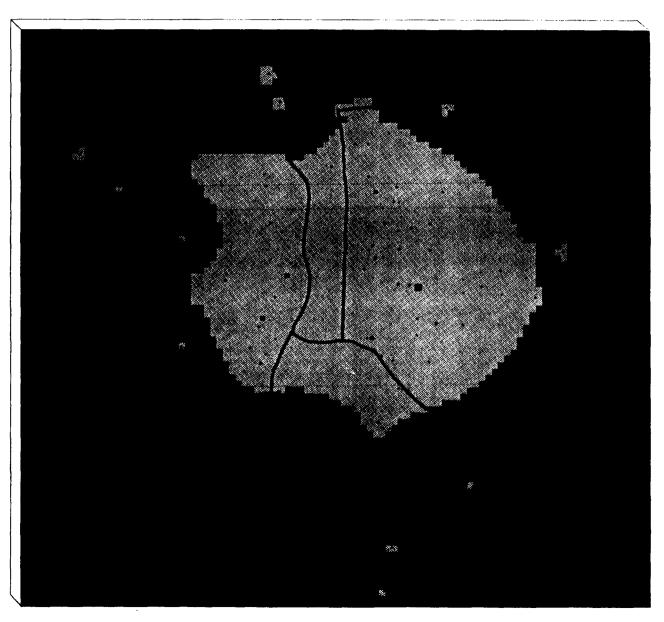
## POS Availability Model: FSP Stores in Manchester & Environs

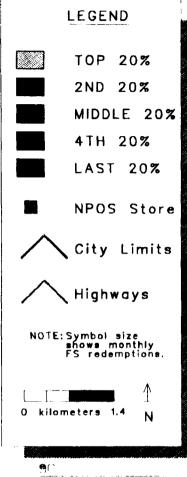


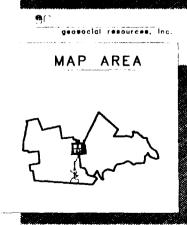




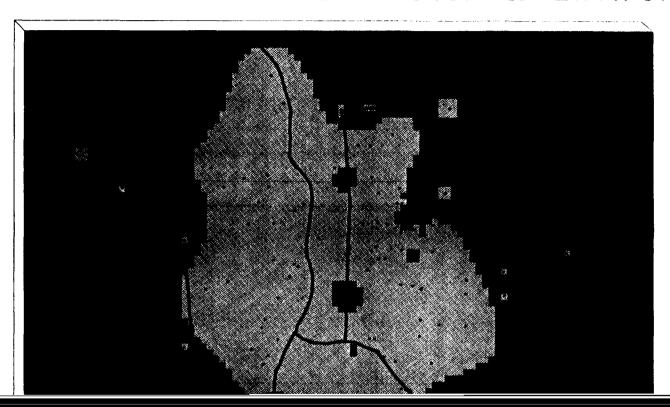
### NPOS Availability Model: FSP Stores in Manchester & Environs

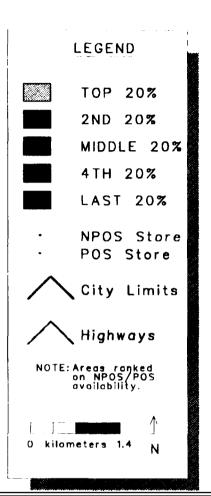






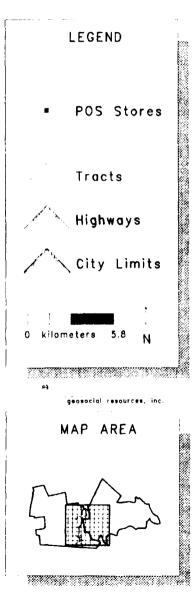
## Model of NPOS without POS: FSP Stores in Manchester & Environs





## POS-Equipped Retailers in FS Program: Manchester/Nashua and Environs

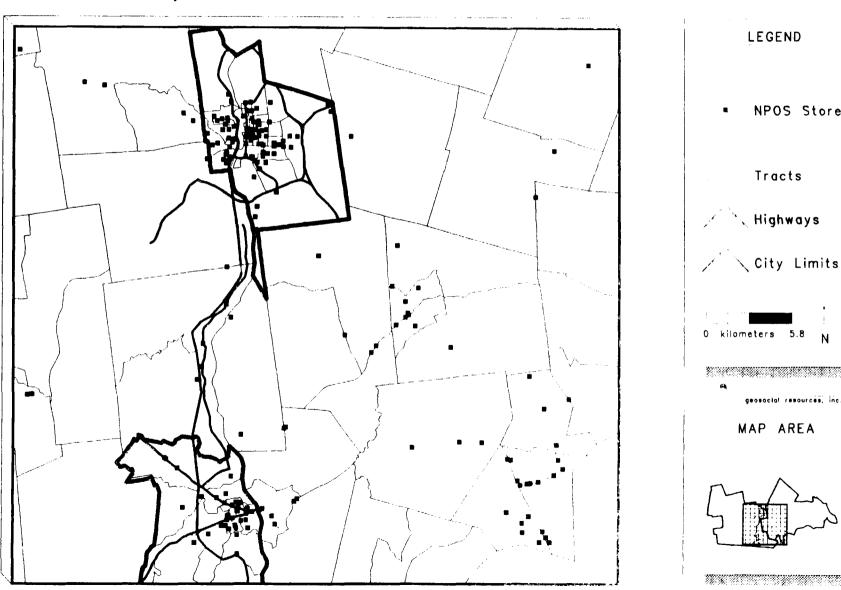




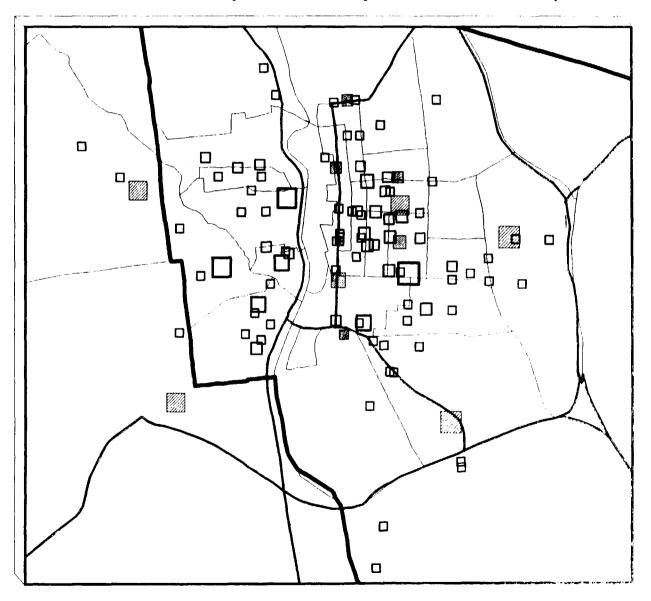
## Non-POS-Equipped Retailers in FS Program: Manchester/Nashua and Environs

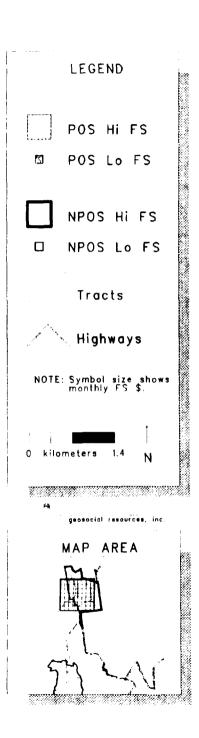
NPOS Stores

Tracts

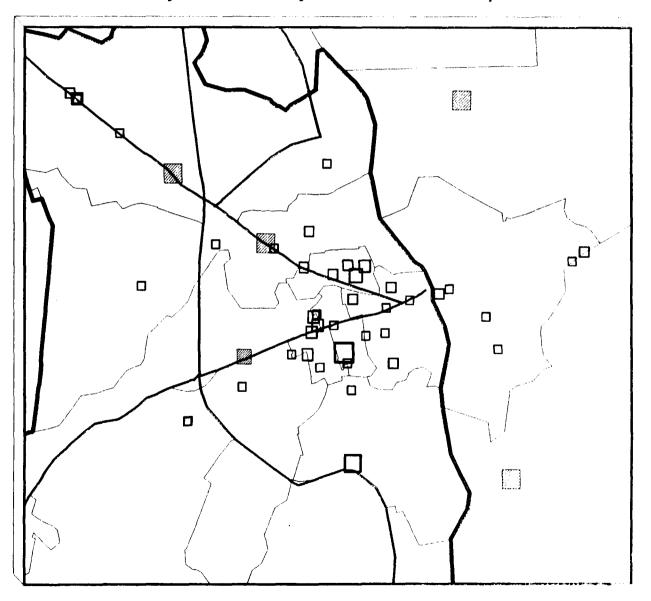


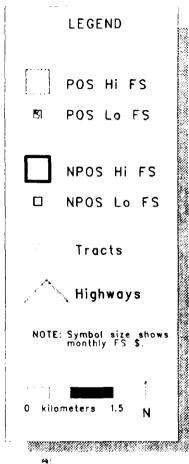
## POS and Non-POS FSP Retailers Manchester, by Monthly FS Redemptions

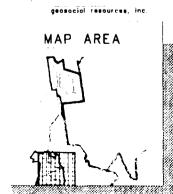




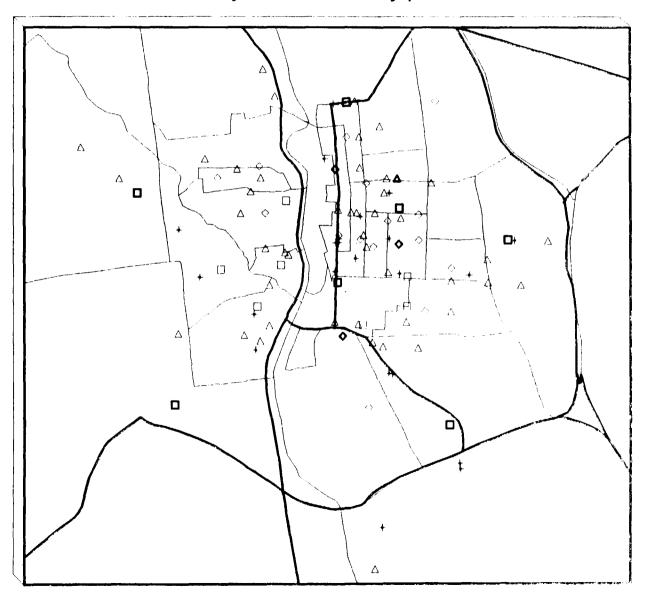
## POS and Non-POS FSP Retailers Nashua, by Monthly FS Redemptions







### POS and Non-POS FSP Retailers Manchester, by Store Type



### LEGEND

#### POS Stores

- Supermarket
- Grocery
- Convenience
- Other Store

### Non-POS Stores

- Supermarket
  - Grocery
- Convenience
- Other Store

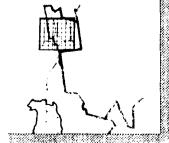
#### Tracts



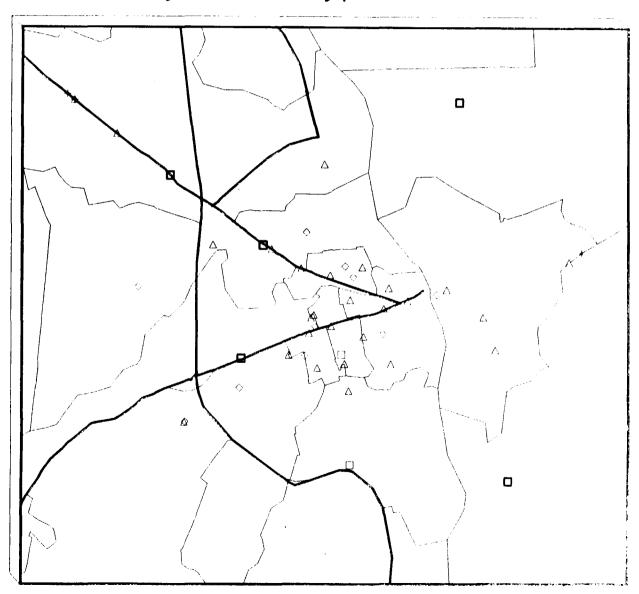


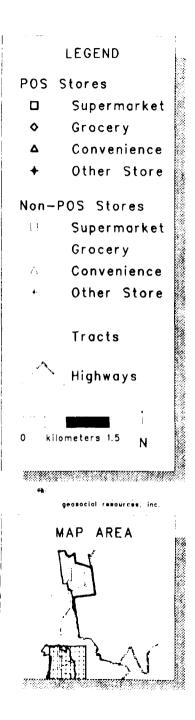
### MAP AREA

geosocial resources, inc.

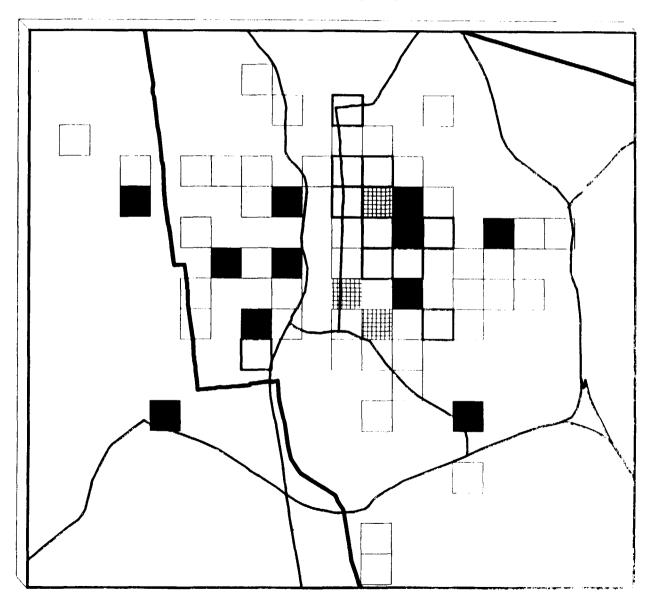


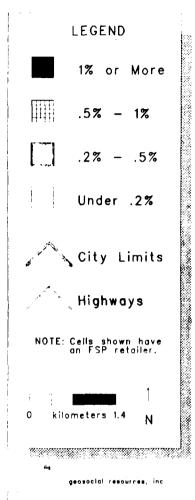
# POS and Non-POS FSP Retailers Nashua, by Store Type



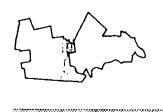


### Percentage of County FS \$: Manchester and Environs



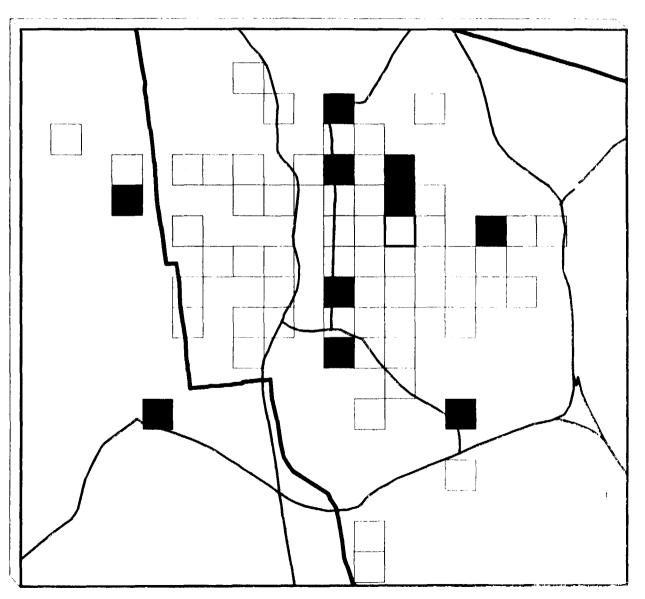


MAP AREA



## POS FS \$ as % Total FS \$:

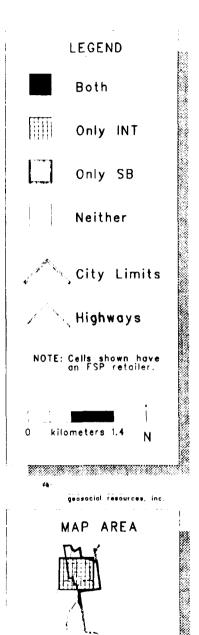
Manchester and Environs



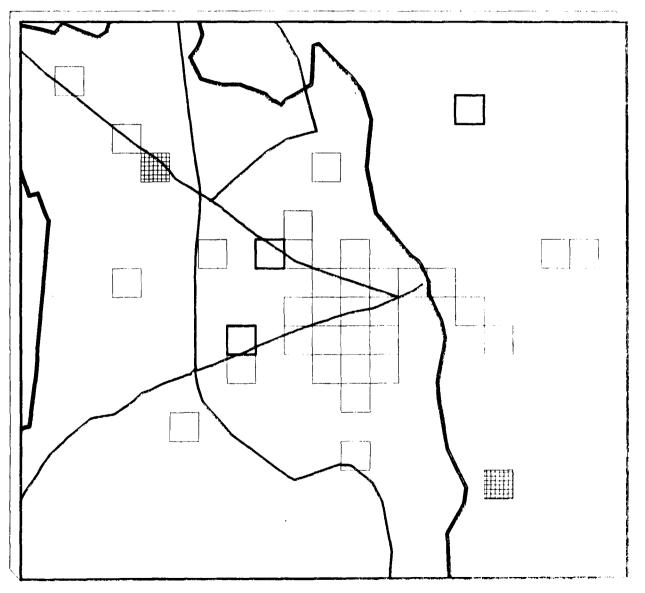
LEGEND Over 75 % 50 to 75 % 25 to 50 % Under 25 % City Limits 📈 📐 Highways NOTE: Cells shown have an FSP retailer. 0 kilometers 1.4 geosocial resources, inc. MAP AREA

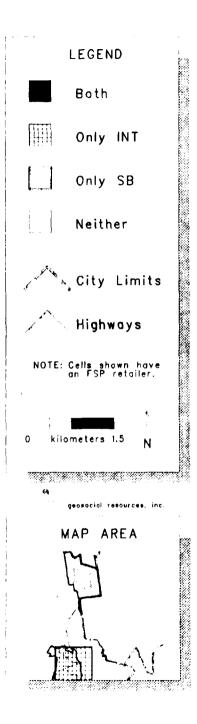
# Integrated and Stand-Beside POS: Manchester, NH and Environs



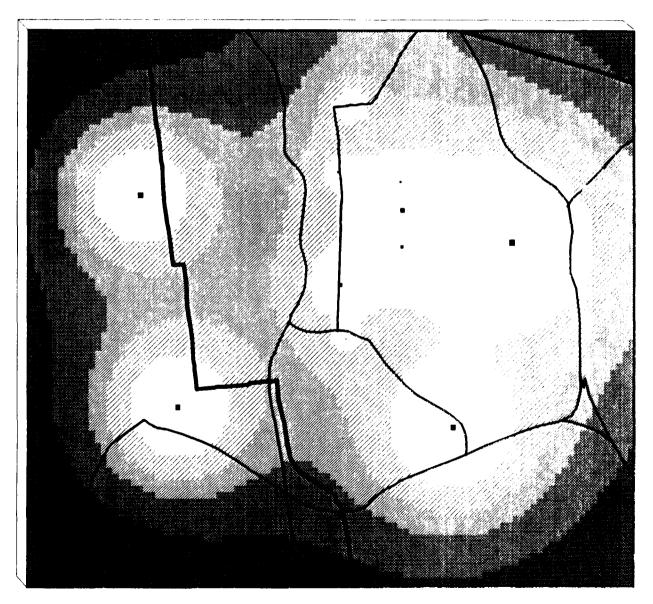


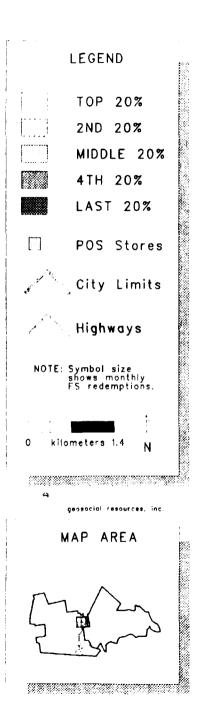
## Integrated and Stand-Beside POS: Nashua, NH and Emvirons



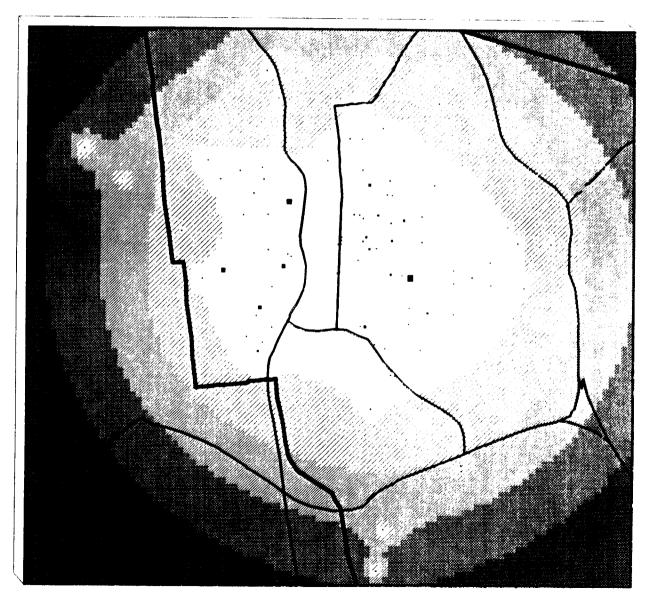


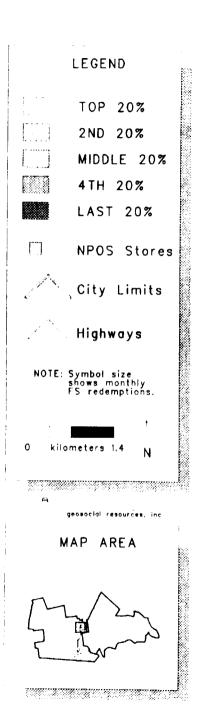
## POS Availability Surface Model: FSP Stores in Manchester Area





# NPOS Availability Surface Model: FSP Stores in Manchester Area





## Model of NPOS without POS: FSP Stores in Manchester Area



LEGEND

TOP 20%

2ND 20%

MIDDLE 20%

4TH 20%

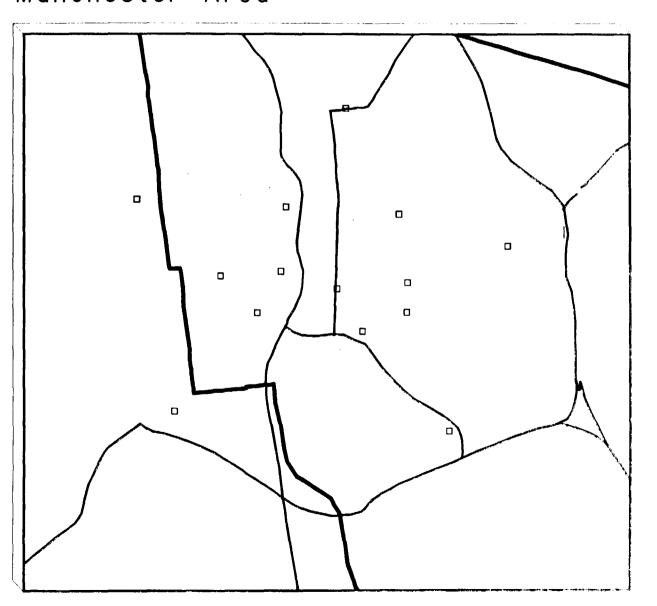
LAST 20%

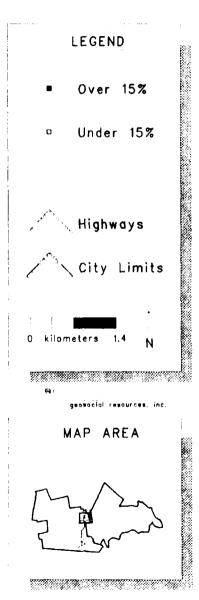
🦯 🌭 City Limits

Highways

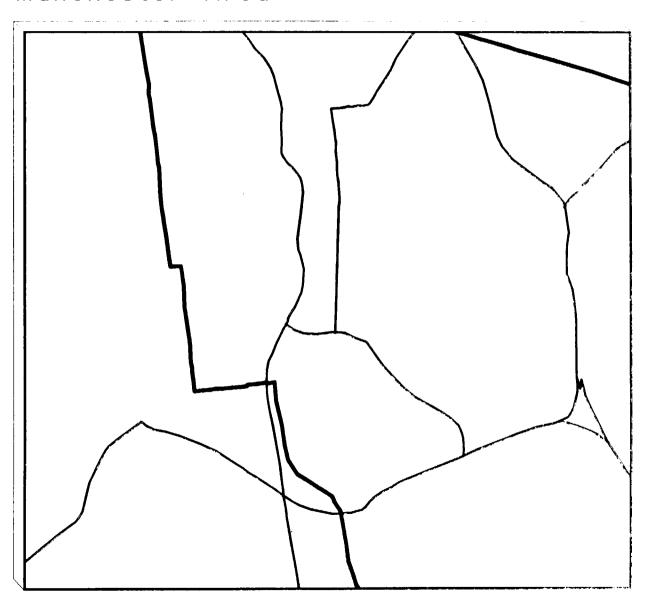
NOTE: Shows NPOS areas without POS stores.

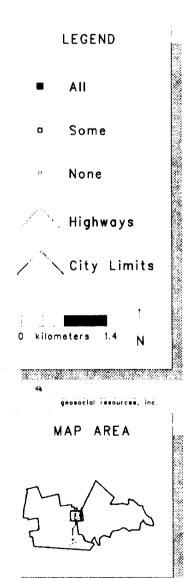
## Supermarkets: FS as % of Food Sales Manchester Area





POS Lanes in Supermarkets with 15% on FS Manchester Area





#### B. MID-ATLANTIC REGION

The FNS Mid-Atlantic region consists of the States of Delaware, Maryland, New Jersey, Pennsylvania, Virginia, and West Virginia, as well as the District of Columbia, Puerto Rico, and the US Virgin Islands. Two of the FNS study areas are located in the Mid-Atlantic region: Essex County, New Jersey, and New Castle County, Delaware. These two areas are primarily served by the NYCE and MAC networks. MOST has a limited



presence in the New Castle market but intends to expand.

Table B.1 lists the fees charged by each of the major networks operating in the study area for the switching of on-line debit transactions. All fees are per transaction.

Table B.1

Network	Fees				
MAC	<ul> <li>\$.0510 switch fee paid by issuer based on volume</li> <li>\$.045 switch fee paid by acquirer</li> </ul>				
MOST	<ul> <li>\$.0608 switch fee paid by acquirer based on volume</li> <li>\$.04 switch fee paid by issuer</li> <li>\$.05 per transaction interchange fee beginning 1/1/94.</li> </ul>				
NYCE	• \$.04 switch fee paid by issuer				

Major food stamp authorized retailers in the Essex County, New Jersey study area with on-line debit programs include:

- Kings
- Pathmark
- Shop-Rite (Wakefern franchise)

In the New Castle County, Delaware study area, major food stamp authorized retailers with on-line debit include:

- ACME
- Pathmark
- Super Fresh
- Thriftway (Fleming franchise)

### Research Methodology

Unlike in the other ten study areas, the main EFT network, MAC, was unable to provide information about retailers accepting debit cards for purchases in the Essex County and New Castle County study areas<sup>3</sup>. MAC was only able to provide a list of retailers in the study areas using BUYPASS as their third party processor<sup>4</sup>. As a result, alternate research efforts had to be initiated.

- By sorting the FNS database alphabetically, major food stamp authorized retailers in the two study areas were identified. These retailers, usually supermarket chains, were contacted for information on their electronic payment systems.
- Using the list obtained from MAC of retailers sending online debit transactions through BUYPASS, additional retailers with on-line debit were identified.
- For the Essex County study area, the first two efforts yielded 18 retailers accepting debit cards for purchases. However, another 738 food stamp authorized retailers remained for whom the status with respect to acceptance of debit cards was unknown. Through an exhaustive telephone information-gathering effort, another 10 retailers were identified as being on-line debit capable, bringing the total for the Essex County study area to 28.

For the New Castle County study area, the first two efforts yielded approximately 30 stores which accepted debit cards for purchases. This left 265 food stamp authorized retailers for whom the status with regard to the acceptance of debit cards was not known. Each retailer was contacted, yielding an additional seven stores in the study

<sup>&</sup>lt;sup>3</sup> The NYCE network was able to comply with our requests. The MOST network was not contacted because of their minor presence in the area and the fact that any retailer accepting MOST cards accepts MAC cards.

<sup>&</sup>lt;sup>4</sup> MAC was able to furnish a list of third party processors who switch transactions from the retailers to the networks. These retailers were contacted, but this effort yielded mixed results. Some processors, such as Mellon, consider retailer locations proprietary and others did not respond to repeated inquiries.

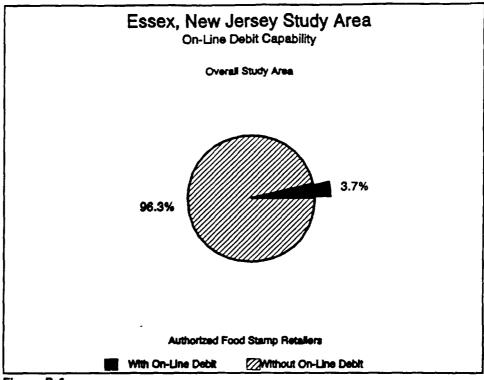


Figure B.1

area with on-line debit.

 Information on the makes and models of terminals used by the retailers was gathered through contacts with the retailers, the retailer's wholesaler, or the retailer's bank.

### Micro Focus Essex County

Essex County, New Jersey is located across the Hudson River from New York City and includes the cities of Bloomfield, Orange, Irvington, and Newark.

Major food stamp authorized retailers include:

• A&P

ACME

Kings

Pathmark

Rite-Aid

Shop-Rite

All of these retailers except Rite-Aid offer on-line debit services in at least some of their stores.

Of the 762 food stamp authorized retailers in the study area, 28, or 3.7 percent, accept debit cards for purchases. This information is illustrated in Figure B.1.

### Common Service Models Encountered

Of the 28 food stamp authorized retailers in the Essex County study area accepting debit cards, all but two are large supermarkets. They include A&P, ACME, Kings, Pathmark, and Shop-Rite.

A&P operates eight full-service supermarkets in Essex County, one of which offers on-line debit. This store uses VeriFone Tranz 330 terminals in a stand beside configuration. BUYPASS drives the terminals and switches transactions to the network. This scenario, common service model option 2, is diagrammed in Figure B.2.

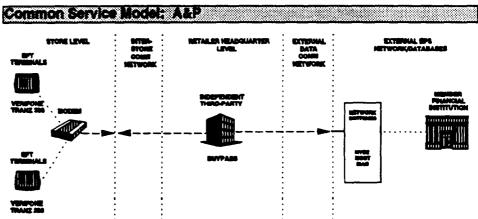


Figure B.2

A contact at the company said that expansion of debit services to other stores in the county will be determined by competition from other retailers. He expects several other stores to begin offering on-line debit services within the next two years. System configurations will depend on the ECR system being used in the store at the time. Currently the company uses both NCR 2127 and IBM 4680 systems, which means that future electronic systems will probably be integrated configurations.

ACME Markets has one store in the Essex County study area.

This store is equipped with Concord/EFS-supplied LINX 1075 terminals in a stand beside configuration. The terminals connect to an in-store concentrator which is linked by means of a leased line to the Concord/EFS processing facility in Chicago. Concord/EFS routes transactions to either the MAC, MOST, or NYCE networks. This scenario, a version of common service model option 2, is diagrammed in Figure B.3.

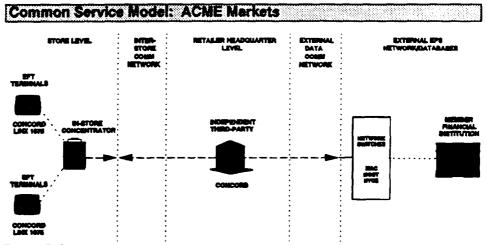


Figure B.3

Kings Super Markets, Inc. has six stores in Essex County, all of which have on-line debit. The stores use NCR 4430 MSR/PIN pads integrated with an NCR 7000 controller/NCR 7053 ECR system. BUYPASS switches transactions to the MAC network. The means of routing of transactions in this scenario is similar to that used by Shop 'N Save in the southeastern New Hampshire study area. The Shop 'N Save scenario is diagrammed in Figure A.5.

Pathmark has eight stores in the Essex County study area. Each store uses common service model option 3 for their electronic payments systems. Stores are equipped with VeriFone Pinstripe III MSR/PIN pads integrated to an IBM 8580 controller-based IBM 4683 ECR system. On-line debit transactions are routed from the lane level through the 8580 to a host computer located at company headquarters. MAC and Yankee 24 transactions are then sent through BUYPASS and NYCE transactions are sent directly to the network. This scenario is diagrammed in Figure B.4.

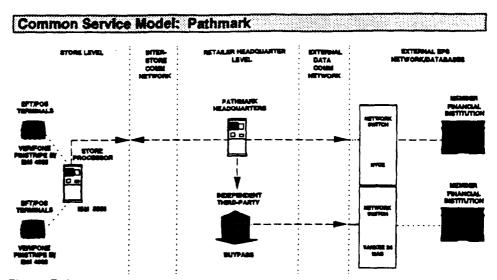


Figure B.4

Wakefern, Inc., a large wholesaler, owns the Shop-Rite banner and oversees five Shop-Rite franchises in the study area. Wakefern officials would not discuss the payment systems used in any of these stores, citing the proprietary nature of the information. However, individual contacts with each of the stores yielded information on ECR and POS terminal configurations. According to one source, Wakefern facilitates the implementation of the ECR and POS systems and switches transactions. Shop-Rite stores use NCR, IBM, and Sweda ECR systems and NCR, VeriFone, or Atalla MSR/PIN pads in both stand-beside and integrated configurations. All but one of the five stores have full lane deployment.

There are four Foodtown stores in the study area. Like Shop-Rite, the stores are franchise operations. The franchisor/wholesaler for Foodtown is Twin County Grocers. Twin County has assisted each store with the implementation of NCR 7000 ECR systems with integrated NCR 4430 MSR/PIN pads in all lanes. Transactions are switched through Deluxe Data Systems.

### EBT Readiness in Essex County

With only 3.7 percent (28 of 762) of food stamp authorized retailers accepting debit cards for purchases, the Essex County study area ranks ninth of the twelve study areas with respect to level of terminal deployment. These 28 retailers account for 30.6 percent of the food stamp redemptions in the study area, placing Essex County sixth of the twelve study areas. This information is illustrated in Figure B.5.

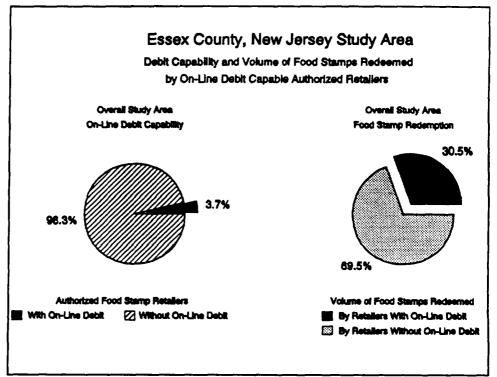


Figure B.5

Five of the six chains mentioned at the top of this section have at least some of their stores equipped for on-line debit. As was previously mentioned, A&P intends to deploy terminals in stores as the competition dictates. Rite-Aid, the only one of the six chains without on-line debit, most likely will be deploying terminals to accept debit cards by the end of next year.

Table B.2 shows how the 28 retailers with on-line debit are

distributed among the three classes of retailers. Note that food stamp redemptions account for less than 15 percent of total food sales for the majority of the retailers (mainly supermarkets) with on-line debit. However, a substantially larger percentage of retailers without on-line debit account for more than 15 percent of total food sales with food stamp redemptions. A possible explanation for this is that those retailers with on-line debit tend to be in more affluent areas (fewer food stamp recipients); and these retailers installed on-line debit systems to attract customers with debit cards, who tend to be more affluent.

Table B.2

	Level of Deployment <sup>1</sup>			
Retailer Type	Full	Part	None	Total
Α	4	0	396	400
В	23	0	24	47
С	1	0	314	315
Total	28	0	734	762

### Legend

Avg. Monthly FS sales > 15% total food sales = all lanes must be deployed. All retailer types.

#### Maps

Immediately following this page are presented four color and fifteen monochromatic maps for this study area. The content and views depicted are described generically in the introduction to Technical Report #2.

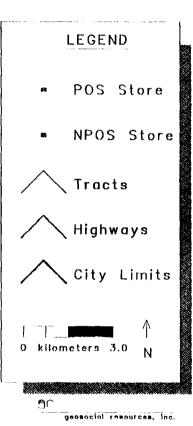
B: Supermarkets: Avg. monthly FS sales < 15% total food sales ⇒ one terminal for each \$11,000 in monthly FS volume up to # of lanes in store.

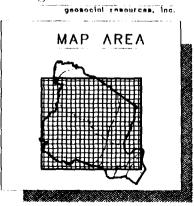
C: All others: Avg. monthly FS sales < 15% total food sales ⇒ one terminal for each \$8,000 in monthly FS volume up to if of lanes in store.</p>

<sup>&</sup>lt;sup>1</sup> Retailers fully, partially, or not at all meeting the regulatory requirement for terminal deployment as set forth in 7 CFR \$274.12(g)(4)(ii).

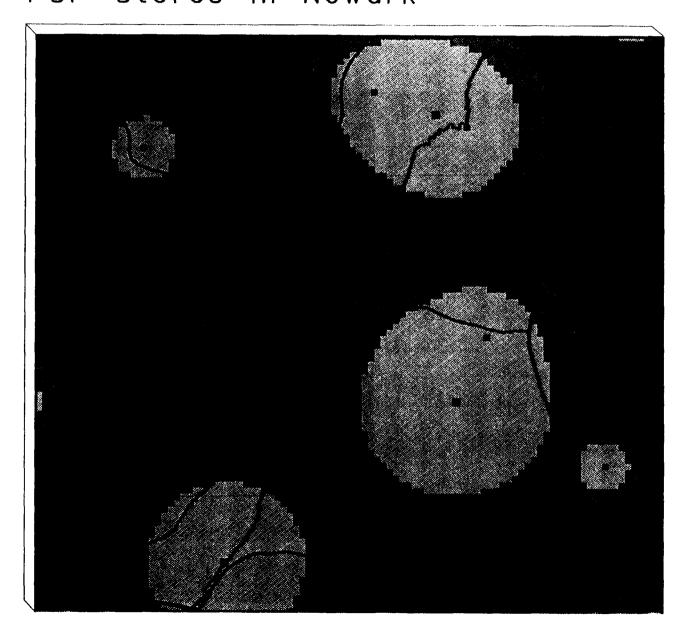
POS, Non-POS Retailers in FS Program: Essex County, NJ

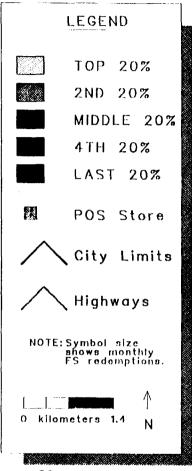


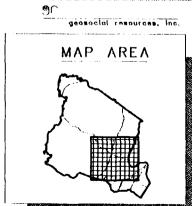




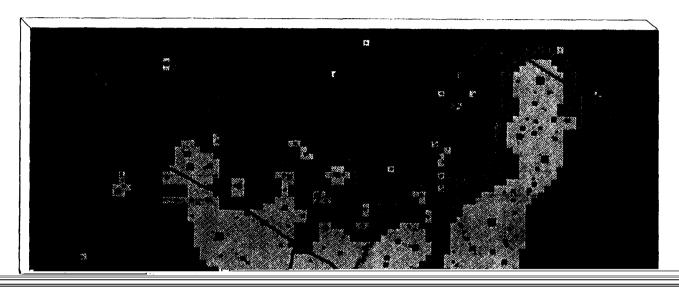
## POS Availability Model: FSP Stores in Newark

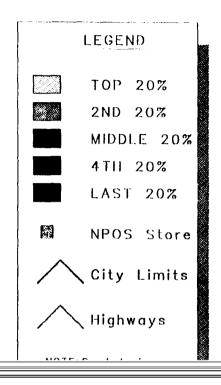






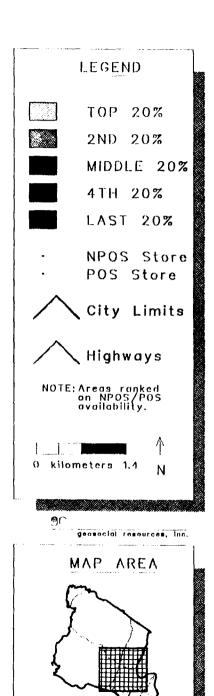
## NPOS Availability Model: FSP Stores in Newark



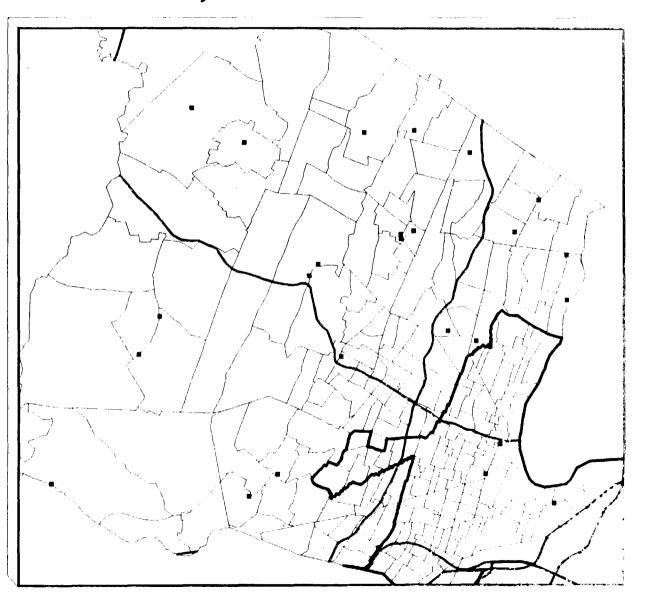


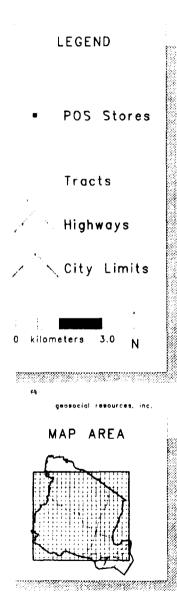
# Model of NPOS without POS: FSP Stores in Newark





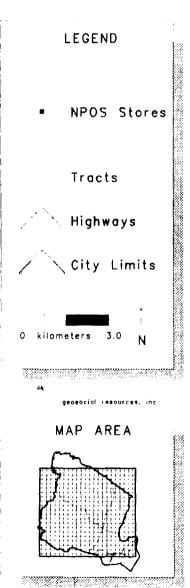
POS-Equipped Retailers in FS Program: Essex County, NJ



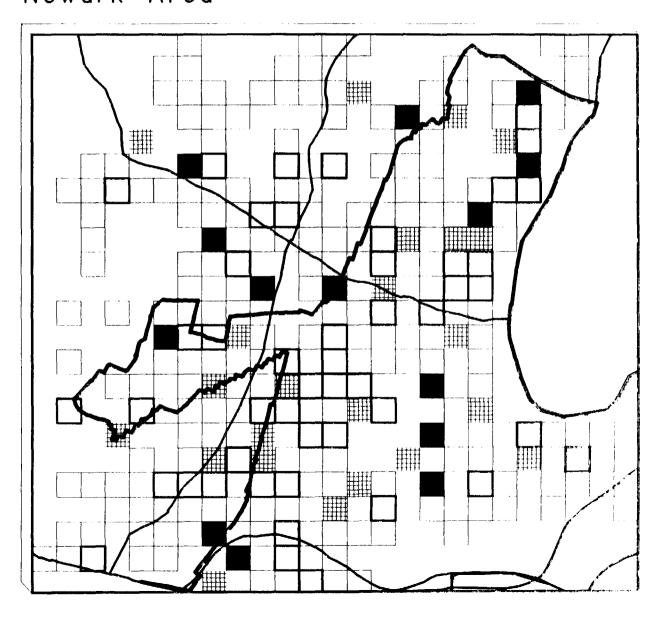


# Non-POS-Equipped Retailers in FS Program: Essex County, NJ

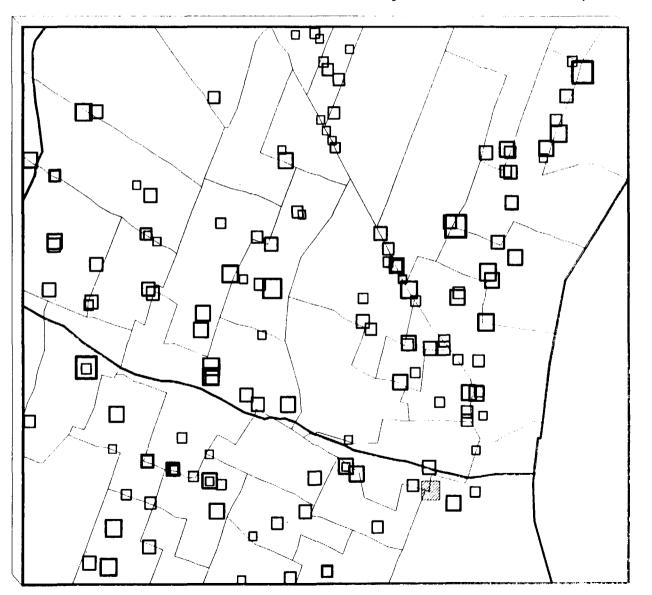




### Percentage of County FS \$: Newark Area

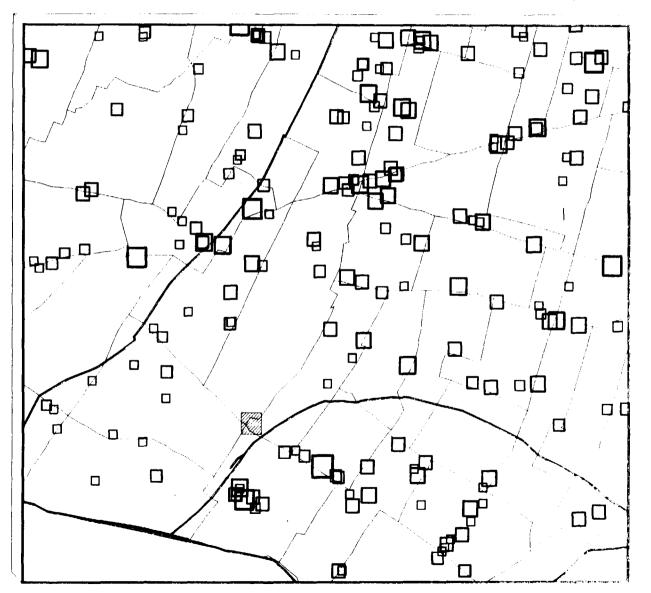


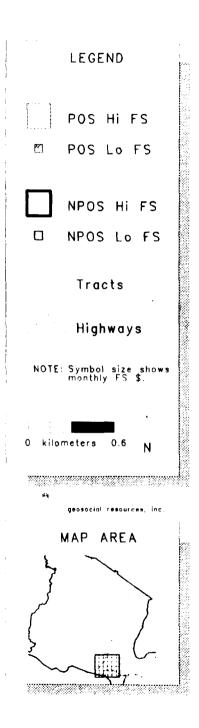
LEGEND 1% or More .5% - 1% .2% - .5% Under .2% City Limits . Highways NOTE: Cells shown have an FSP retailer. geosocial resources, inc MAP AREA  POS and Non-POS FSP Retailers
Northern Newark, Monthly FS Redemptions



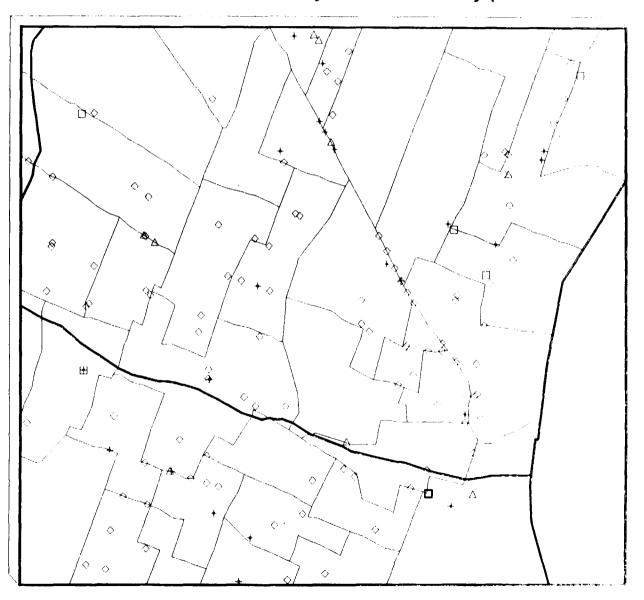
LEGEND POS Hi FS POS Lo FS NPOS HI FS NPOS Lo FS Tracts Highways NOTE: Symbol size shows monthly FS \$. geosocial resources, inc. MAP AREA

POS and Non-POS FSP Retailers
Western Newark, Monthly FS Redemptions





# POS and Non-POS FSP Retailers Northern Newark, by Store Type



### LEGEND

### POS Stores

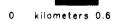
- Supermarket
- ♦ Grocery
- △ Convenience
- + Other Store

### Non-POS Stores

- Supermarket
  Grocery
- Convenience
- · Other Store

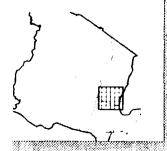
### Tracts



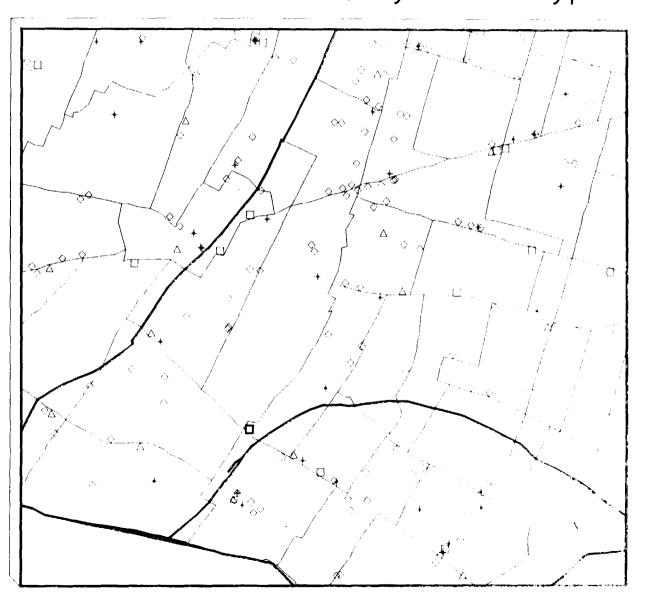


geosocial resources, inc.

MAP AREA



# POS and Non-POS FSP Retailers Western Newark Area, by Store Type



### LEGEND

#### POS Stores

- □ Supermarket
- ♦ Grocery
- △ Convenience
- + Other Store

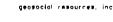
### Non-POS Stores

- □ Supermarket
  - Grocery
- Convenience
- → Other Store

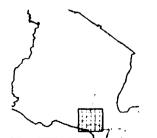
### Tracts

Highways

0 kilometers 0.6 N

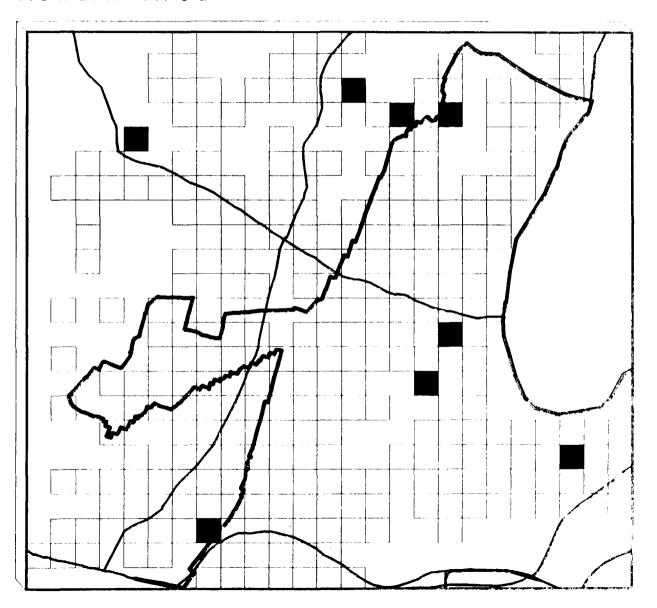


MAP AREA



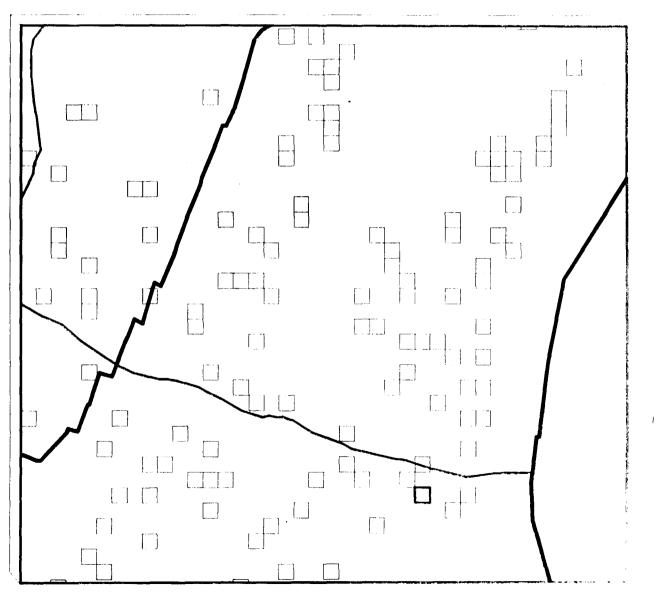
POS FS \$ as % Total FS \$:

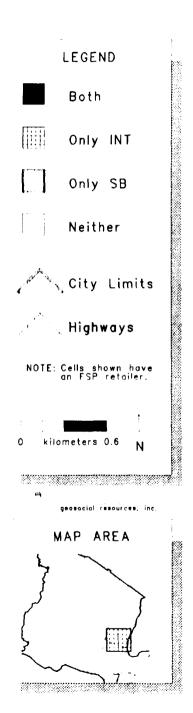
Newark Area



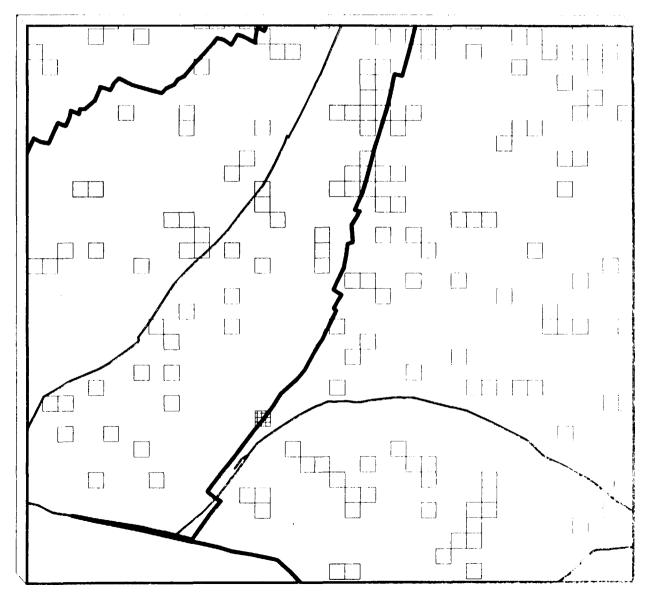
LEGEND Over 75 % 50 to 75 % 25 to 50 % Under 25 % City Limits Highways NOTE: Cells shown have an FSP retailer. geasocial resources, inc. MAP AREA

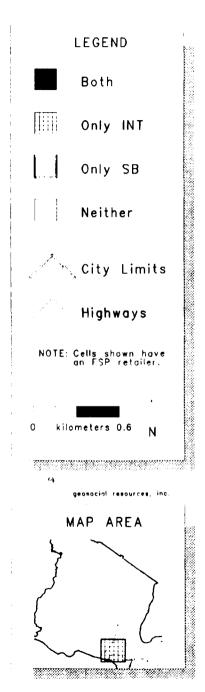
### Integrated and Stand-Beside POS: Northern Newark Area



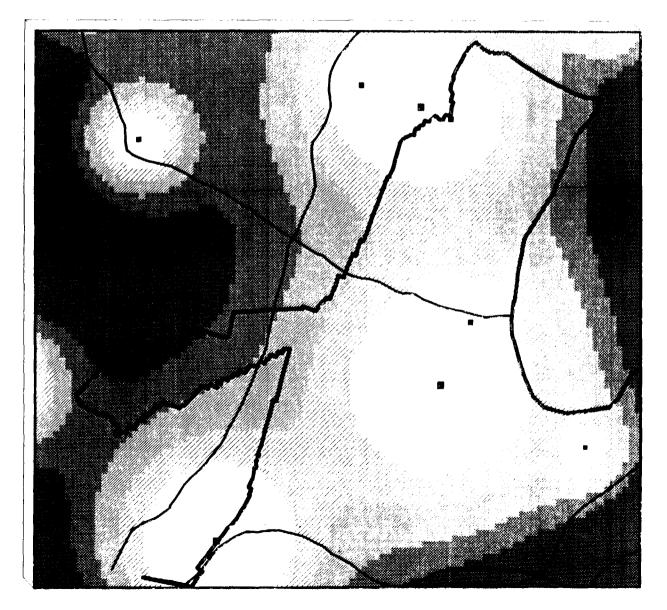


## Integrated and Stand-Beside POS: Western Newark Area





## POS Availability Surface Model: FSP Stores in Newark

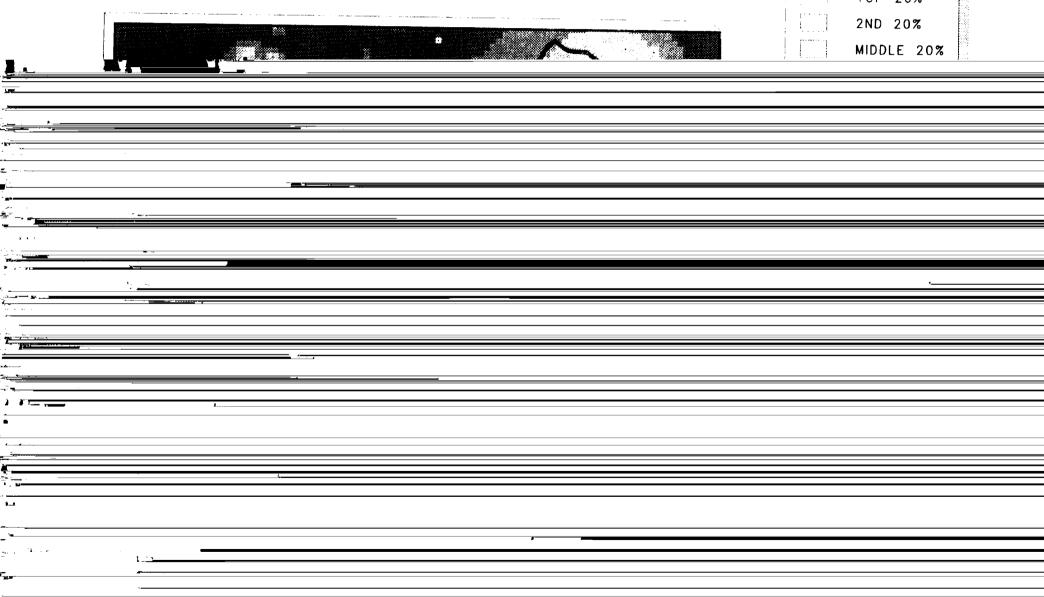


LEGEND TOP 20% 2ND 20% MIDDLE 20% 4TH 20% LAST 20% POS Stores City Limits Highways NOTE: Symbol size shows monthly FS redemptions. kilometers 1.4 geosocial resources, inc. MAP AREA

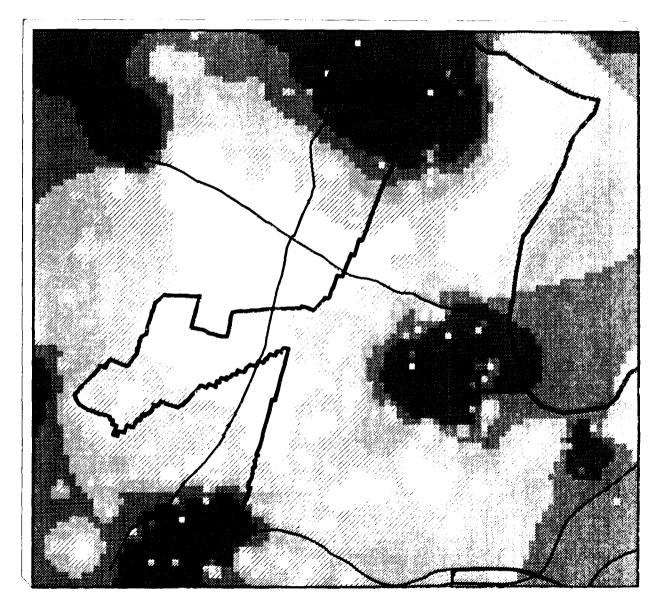
## NPOS Availability Surface Model: FSP Stores in Newark

LEGEND

TOP 20%



## Model of NPOS without POS: FSP Stores in Newark



LEGEND

TOP 20%

2ND 20%

MIDDLE 20%

4TH 20%

LAST 20%

City Limits

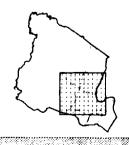
Highways

NOTE: Shows NPOS areas without POS stores.

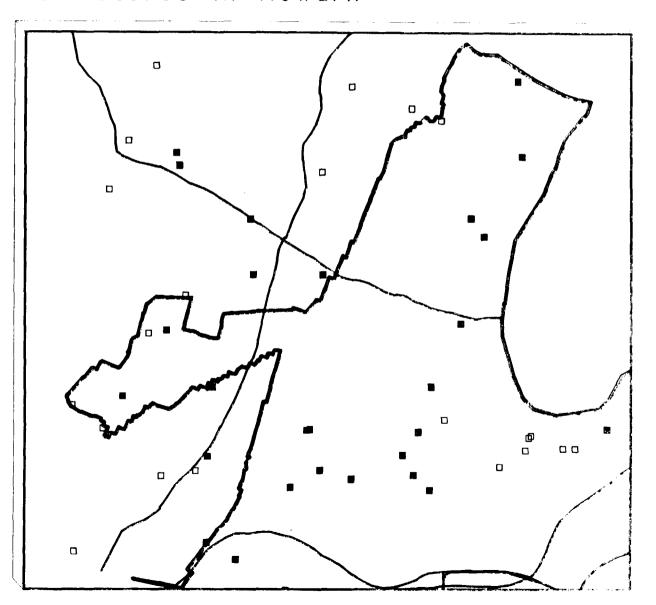
kilometers 1.4

geosacial resources, inc.

MAP AREA

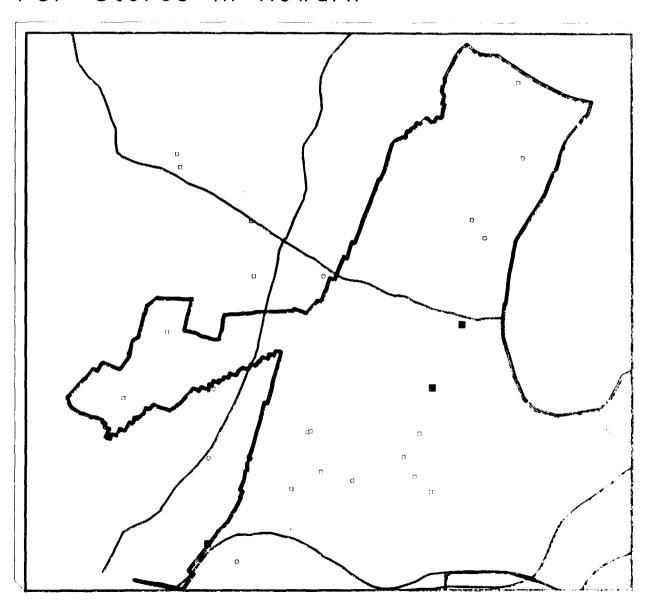


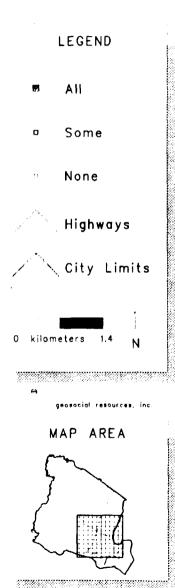
Supermarkets: FS as % of Food Sales FSP Stores in Newark



LEGEND Over 15% Under 15% Highways · City Limits 0 kilometers 1.4 geosocial resources, inc. MAP AREA

POS Lanes in Supermarkets with 15% on FS FSP Stores in Newark





### Micro Focus New Castle County

New Castle County is the northernmost of the three Delaware counties and includes the cities of Newark and Wilmington. Major food stamp authorized retailers in the area are:

- Seven-Eleven
- Acme
- Cumberland Farms
- Pathmark

- Super Fresh
- Wawa
- Independently-owned Thriftway stores (Fleming franchises)

Of these, Acme, Pathmark, Super Fresh, and the independentlyowned Thriftway stores accept debit cards for purchases. Cumberland Farms recently issued a request for proposals for an electronic payments system.

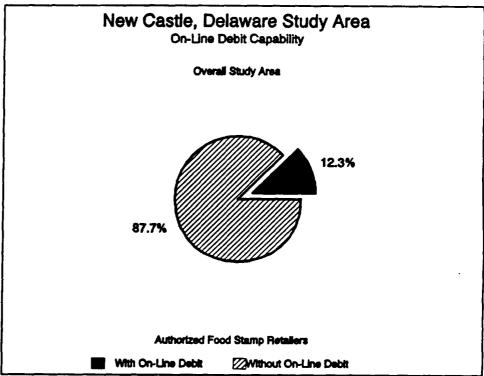


Figure B.6

Of the 300 food stamp authorized retailers in New Castle County, 37, or 12.3 percent, accept debit cards for purchases. Figure B.6 illustrates this information.

### Common Service Models Encountered

Pathmark operates five stores in the study area while ACME has twelve. ACME stores in Delaware use either IBM 3683 or 4683 ECRs. The service models used in ACME and Pathmark stores are discussed in detail in the previous section on Essex County, New Jersey.

The five Super Fresh Food Markets in New Castle County all accept debit cards for purchases using common service model option 2. The stores use IVI T3L MSR/PIN pads integrated with a controller-based IBM 4683 ECR system. Currently Super Fresh accepts only the MAC card (through BUYPASS), but eventually stores will accept NYCE and MOST. This scenario is similar to that used by Shop 'N Save stores in southeastern New Hampshire, and is diagrammed in Figure A.5.

The remainder of food stamp authorized retailers accepting debit cards for purchases go through either their wholesaler or their bank for on-line debit services. Two wholesalers doing business in New Castle County, Wakefern and Fleming Foods, offer on-line debit services. Wakefern is based in Elizabeth, New Jersey and owns the Shop-Rite name. Two independently-owned Shop-Rite stores operate in the New Castle County study area. Both of these stores offer on-line debit using NCR 4430 MSR/PIN pads integrated with NCR ECR systems. Wakefern switches transactions for these retailers.

Fleming Foods operates in 36 states and owns the Thriftway and Shop 'N Bag names. All Thriftway and Shop 'N Bag stores are independently owned, but Fleming acts as supplier. Fleming's online debit program offers two options to retailers. The first is for locations with projected low on-line debit transaction volume. Fleming arranges for the store to be supplied with one or more dial-up VeriFone Tranz 330 terminals. Transactions are switched through Concord/EFS. The second option is aimed at retailers with the potential for a large number of on-line debit transactions. Stores in this category have a leased line connected to BUYPASS. ECR and electronic payment systems are either NCR 2127 with NCR 4430 MSR/PIN pads or ICL Datachecker with a stand beside terminal.

Fleming provides debit services to one Shop 'N Bag and four Thriftway supermarkets in the study area. All of these retailers have dial-up VeriFone Tranz 330 terminals. The latter service model, virtually identical to that employed by the A&P store in Essex County, is illustrated in Figure B.2.

The remainder of Fleming-supplied stores and several other retailers obtain on-line debit services through their banks. Banks operating in New Castle County with established on-line debit programs include Wilmington Trust and Beneficial National Bank. Wilmington Trust offers retailers the option of either leasing or purchasing VeriFone Tranz 330 stand beside terminals<sup>5</sup>. Those retailers desiring to purchase their terminals do so directly from VeriFone while those wanting to lease make arrangements with BUYPASS. BUYPASS serves as transaction processor in both cases.

Beneficial National Bank has a similar program to Wilmington Trust. Four food stamp authorized retailers in the New Castle study area obtain on-line debit services through Beneficial. Transactions are sent to BUYPASS using either NBS TALTEK 727 or VeriFone Tranz 330 terminals.

### EBT Readiness in New Castle County

With 37 of 300 (12.3 percent) of food stamp authorized retailers accepting debit cards for purchases, the New Castle County study area is third to the Houston and Des Moines study areas in percentage of food stamp authorized retailers with on-line debit. Figure B.7 shows that these 37 retailers redeem 63.9 percent of the food stamps in the study area.

Only in the southeastern New Hampshire study area do retailers with on-line debit redeem higher percentages of food stamps.

<sup>&</sup>lt;sup>6</sup> Wilmington Trust until this 1993 had an agreement with NBS to provide retailers with TALTEK 727 MSR/PIN pads. Many retailers still use this model of terminal.

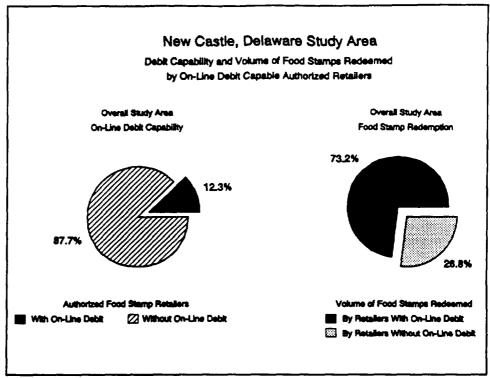


Figure B.7

Table B.3 distributes retailers in nine categories based on their level of terminal deployment and volume of food stamp redemption.

Table B.3

Retailer Type	Level of Deployment <sup>1</sup>			
	Full	Part	None	Total
А	4	1	85	90
В	29	2	3	34
С	1	0	175	176
Total	34	3	263	300

Legend A:

Avg. Monthly FS sales > 15% total food sales = all lanes must be deployed. All retailer types.

Note that all but one of the retailers with full deployment are

B: Supermarkets: Avg. monthly FS sales < 15% total food sales ⇒ one terminal for each \$11,000 in monthly FS volume up to # of lanes in store.

C: All others: Avg. monthly FS sales < 15% total food sales ⇒ one terminal for each \$8,000 in monthly FS volume up to # of lanes in store.

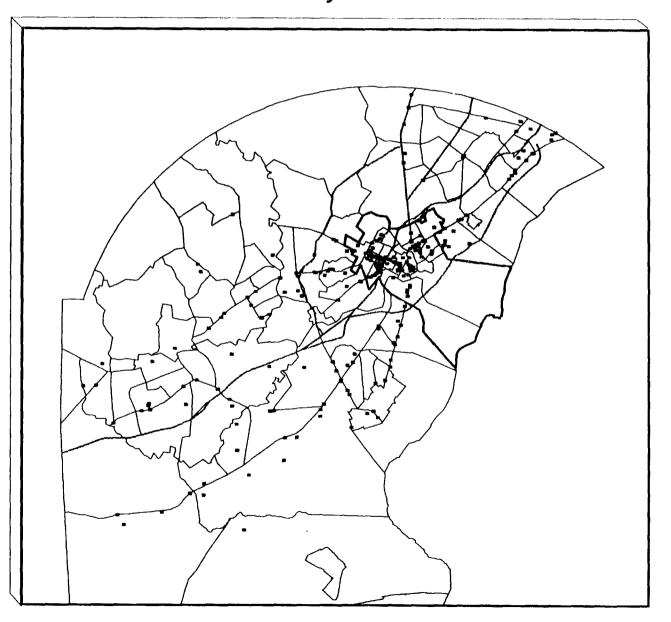
<sup>&</sup>lt;sup>1</sup> Retailers fully, partially, or not at all meeting the regulatory requirement for terminal deployment as set forth in 7 CFR § 274.12(g)(4)(ii).

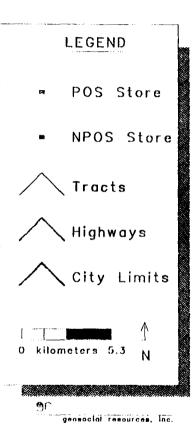
supermarkets. This is consistent with what has been observed in other areas, namely that the larger retailers are the first to offer on-line debit services. However, the table also indicates that approximately one-third of food stamp authorized retailers without on-line debit are supermarkets. Our research indicates that the majority of these retailers are independents.

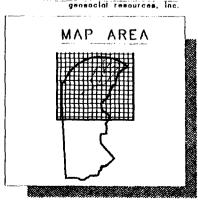
#### Maps

Immediately following this page are presented four color and twelve monochromatic maps for this study area. The content and views depicted are described generically in the introduction to Technical Report #2.

POS, Non-POS Retailers in FS Program: New Castle County, DE





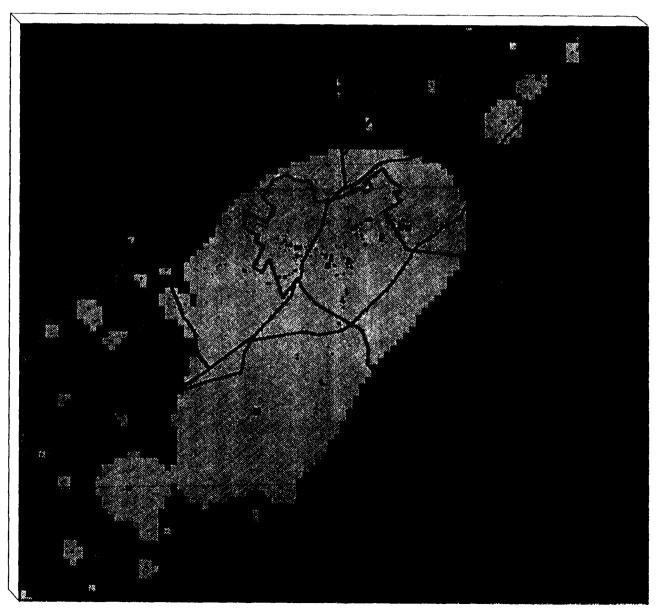


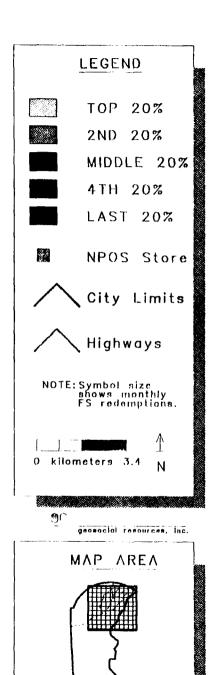
# POS Availability Model: FSP Stores in Wilmington



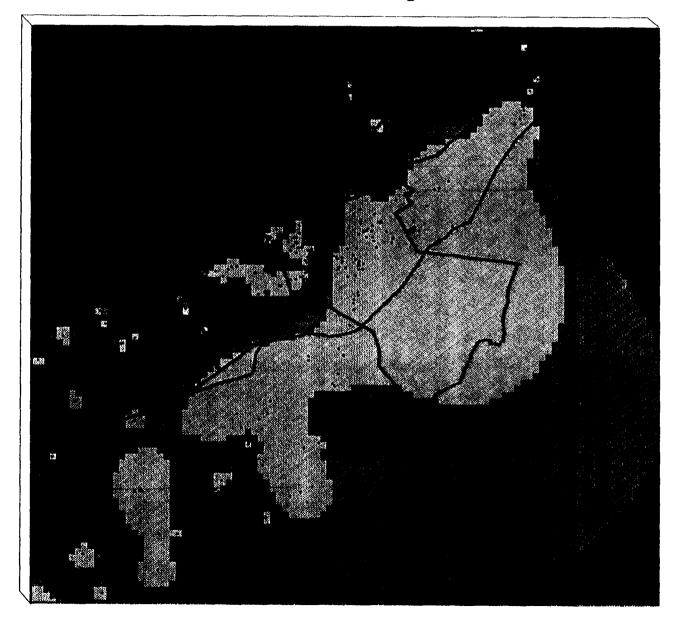


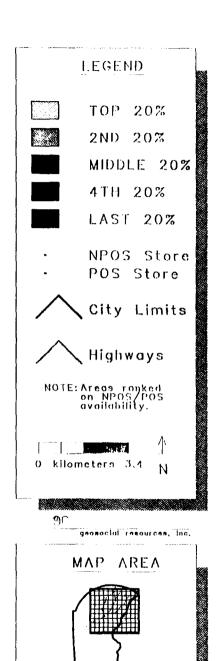
# NPOS Availability Model: FSP Stores in Wilmington





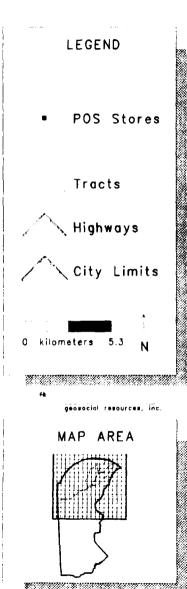
# Model of NPOS without POS: FSP Stores in Wilmington





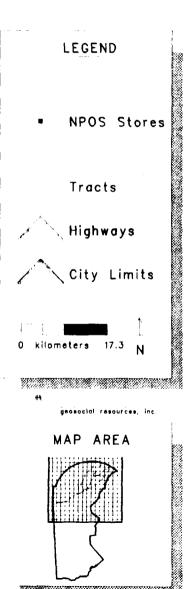
### POS-Equipped Retailers in FS Program: New Castle County, DE



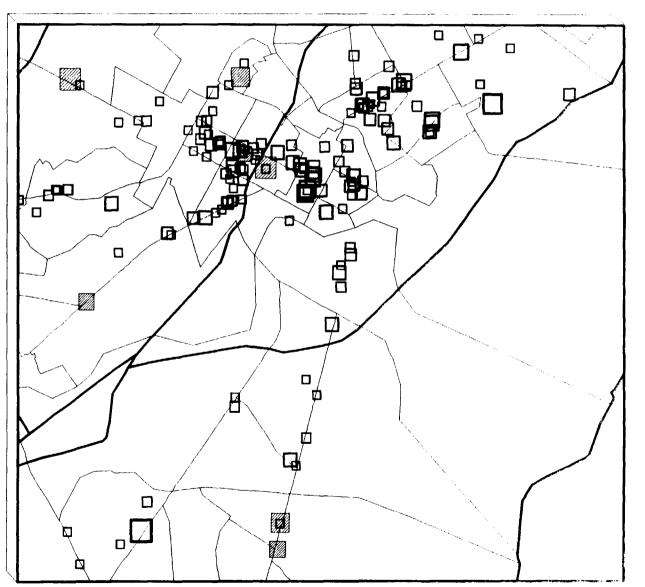


### Non-POS-Equipped Retailers in FS Program: New Castle County, DE



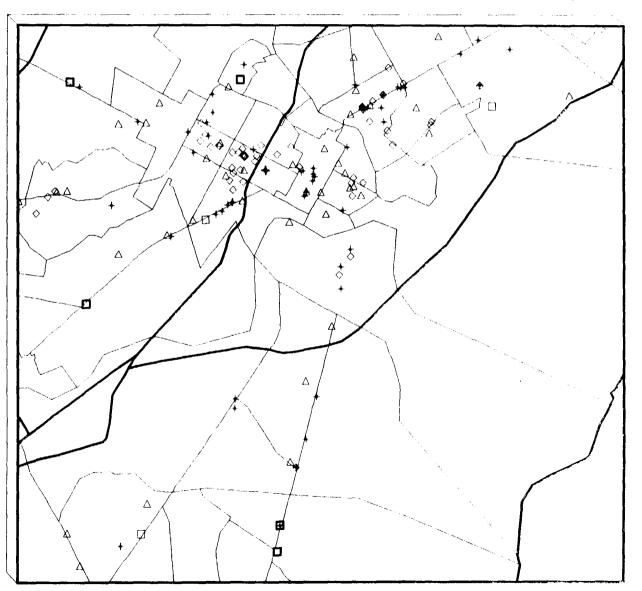


## POS and Non-POS FSP Retailers Wilmington Area, Monthly FS Redemptions



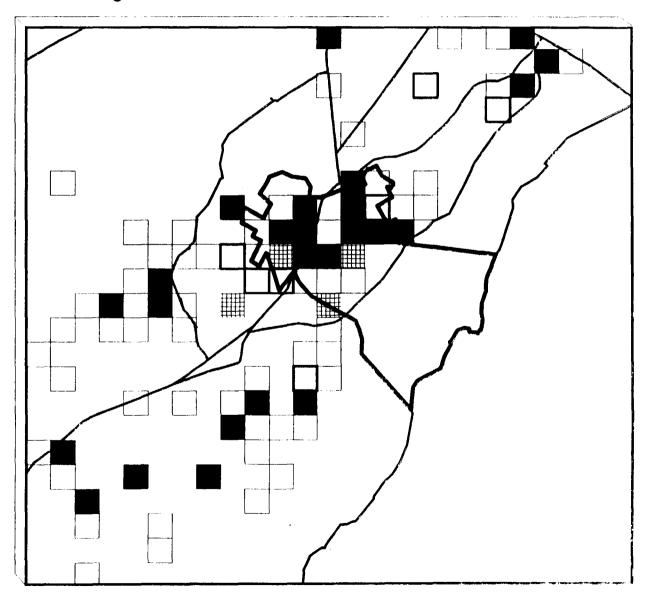
LEGEND POS HI FS POS Lo FS NPOS HI FS NPOS Lo FS Tracts 📐 Highways NOTE: Symbol size shows monthly FS \$. 0 kilometers 1.4 geosocial resources, inc MAP AREA

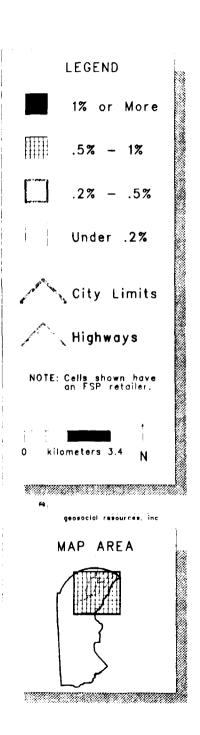
## POS and Non-POS FSP Retailers Wilmington Area, Monthly FS Redemptions



### LEGEND POS Stores Supermarket Grocery Convenience Other Store Non-POS Stores Supermarket Grocery Convenience Other Store Tracts Highways kilometers 1.4 geosocial resources, inc. MAP AREA

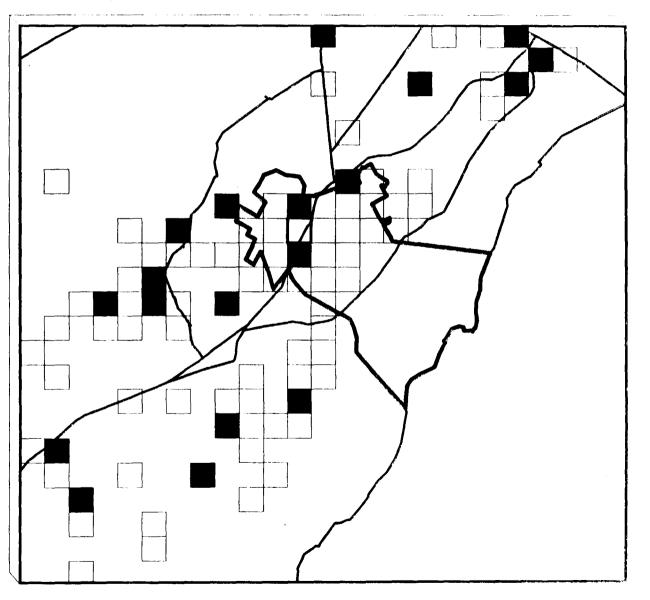
## Percentage of County FS \$: Wilmington Area

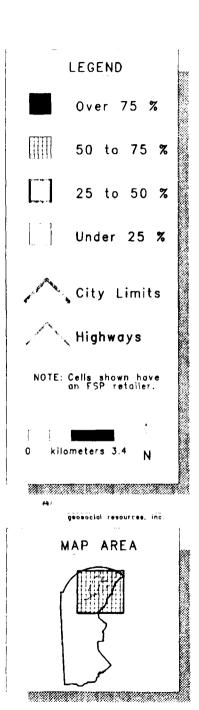




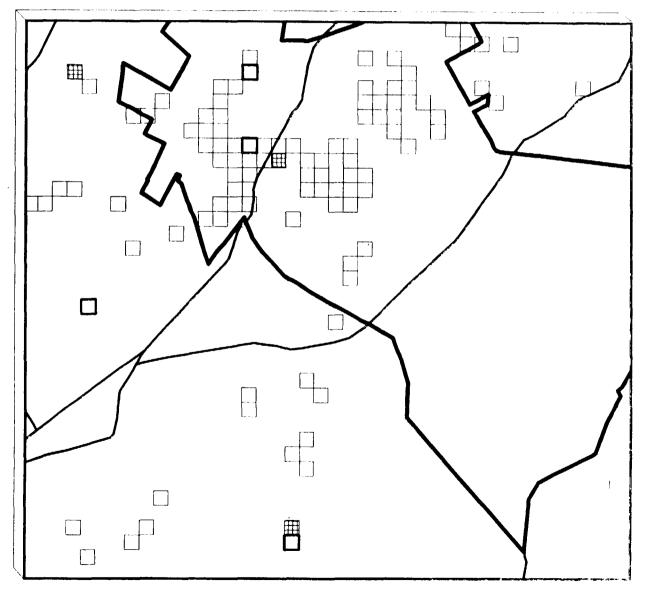
## POS FS \$ as % Total FS \$:

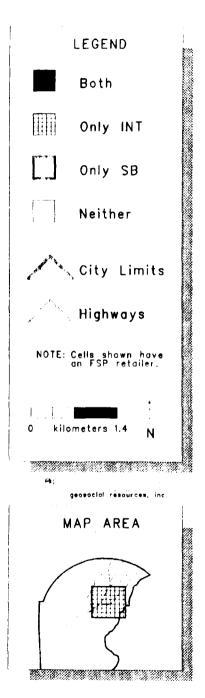
Wilmington Area



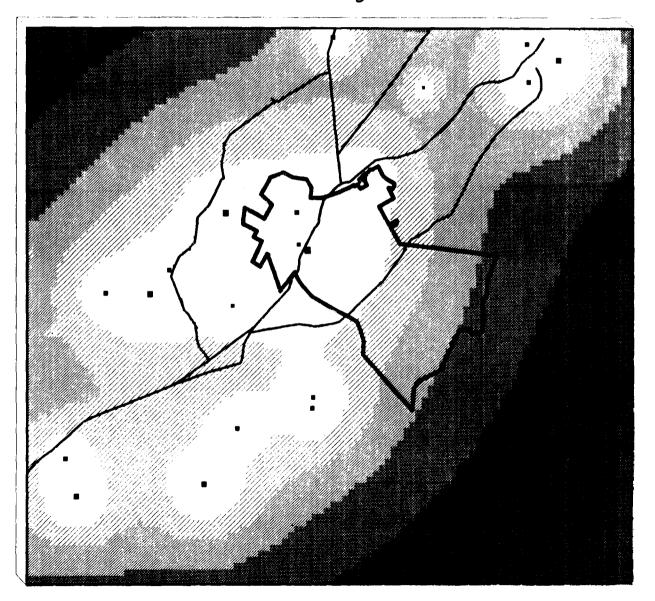


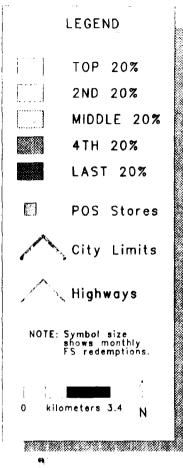
Integrated and Stand-Beside POS: Wilmington Area

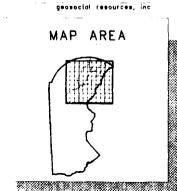




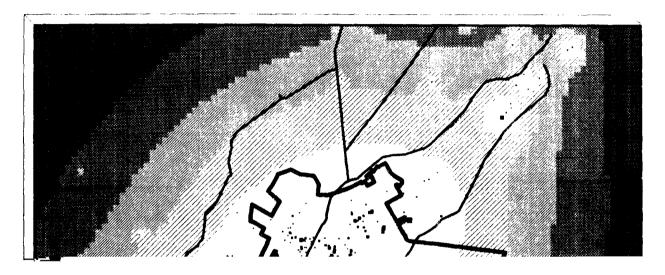
# POS Availability Surface Model: FSP Stores in Wilmington

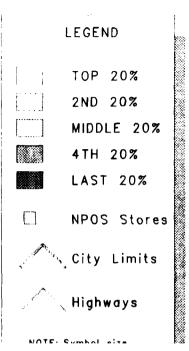




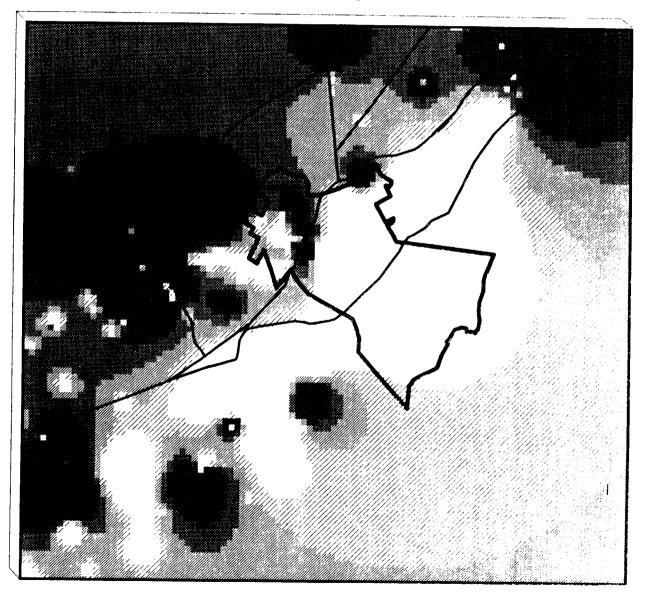


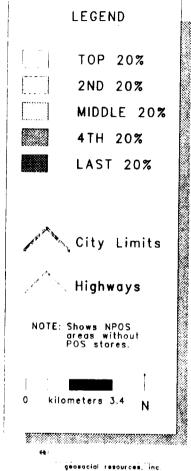
# NPOS Availability Surface Model: FSP Stores in Wilmington

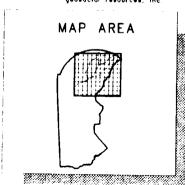




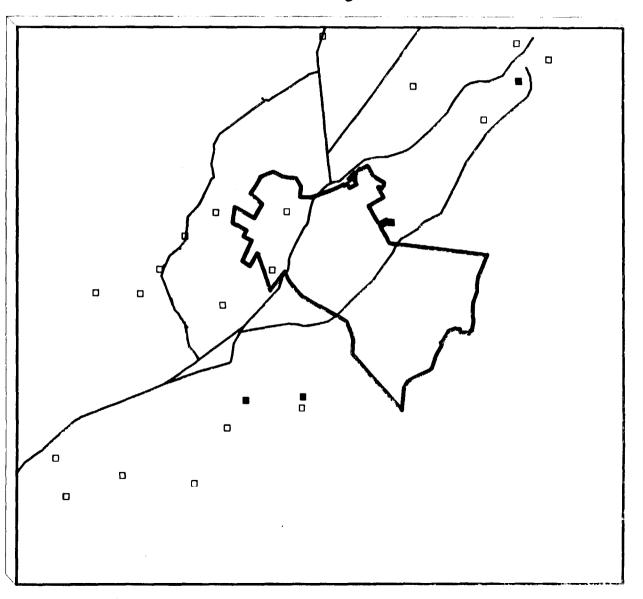
# Model of NPOS without POS: FSP Stores in Wilmington

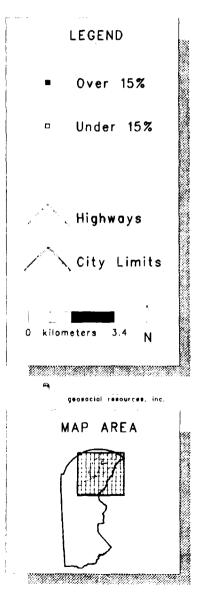




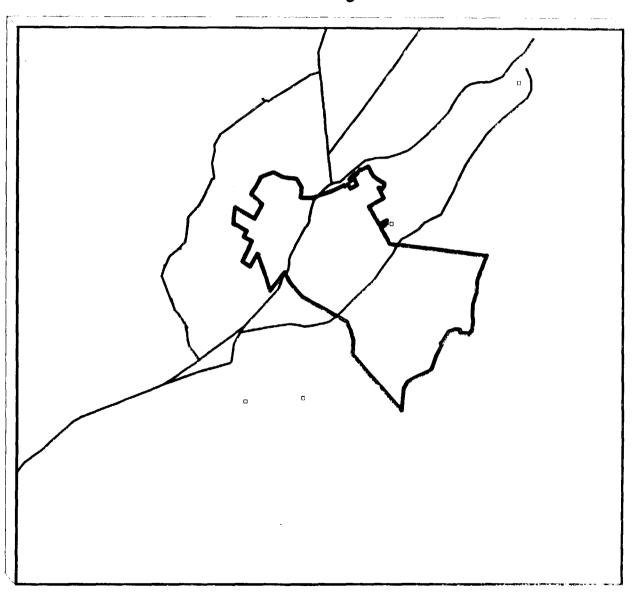


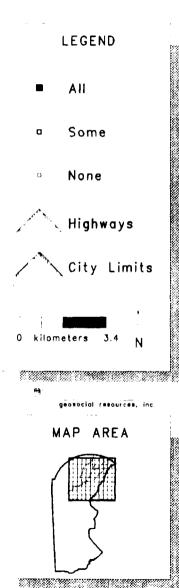
# Supermarkets: FS as % of Food Sales FSP Stores in Wilmington





## POS Lanes in Supermarkets with 15% on FS FSP Stores in Wilmington





### C. SOUTHEAST REGION

The FNS Southeast Region consists Florida. Georgia, Alabama. Kentucky, Mississippi, North South Carolina, Carolina, and Tennessee. Two FNS-selected study areas are in this region: Greater Atlanta, Georgia (Fulton, Dekalb, Clayton, and Cobb Counties); and Charleston County, South Carolina. The dominant EFT network in the area is Southeast Switch, which operates the Honor network. Honor



charges a \$.06 switch fee, which is split between the acquiring bank and card issuer.

### Research Methodology

The research effort for the two study areas in the Southeast Region consisted of the following:

- obtaining the FNS database containing food stamp authorized retailers in each study area;
- obtaining a list from Southeast Switch of retailers that accept Honor cards for purchases; and
- combining this data with information gathered through calls to retailers to complete a database of all food stamp authorized retailers in the Greater Atlanta and Charleston study areas that accept debit cards for purchases.

### Micro Focus Greater Atlanta

The Greater Atlanta study area includes the cities of Atlanta and Marietta. Use of on-line debit in this area is limited to some of the major food chains and a few independents. Supermarket chains with on-line debit programs include:

- A&P
   Cub Foods
- Kroger
   Publix
   Wayfield

Convenience stores such as Circle K and Stop 'N Go also offer online debit services.

Of the 1,123 food stamp authorized retailers in the Greater Atlanta study area, our research indicated that 87 accept debit cards for purchases. The pie chart in Figure C.1 depicts this number as a percentage of all food stamp authorized retailers in the study area. The bar graph to the right depicts the distribution of food stamp authorized retailers among the four counties in the study area, expressing the number of food stamp authorized retailers in each county as a sum of those with and without online debit capability.

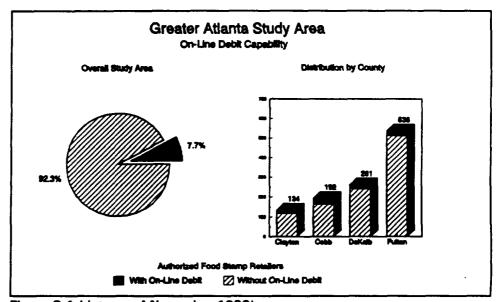


Figure C.1 (data as of November 1993)

Several multi-store operations do not currently offer on-line debit. They include:

Bruno's Finer Foods, with six stores in the study area.
 Bruno's is currently considering an on-line debit system. A contact at the company declined to discuss the specifics of the plan for competitive reasons.

- Golden Gallon, with eleven locations in Greater Atlanta.
   Future plans for on-line debit are not known as company officials did not return telephone calls.
- Ingles Markets, which is testing a credit system in one location but has no plans for on-line debit.
- Majik Market and Piggly Wiggly, neither of which has immediate plans for an on-line debit system.
- QuikTrip convenience stores. QuikTrip stores have scrip machines in all locations but the company is not considering on-line debit.
- Winn-Dixie, with 42 supermarkets in Greater Atlanta, is one
  of the largest retailers in the study area without on-line
  debit. While research indicated that Winn Dixie is currently
  developing an on-line debit system, we were unable to
  obtain any specifics or a timetable for its implementation.

### Common Service Models Encountered

A&P has 46 stores in the Greater Atlanta study area, but only one is currently listed by Honor as accepting debit cards for purchases. This store, a former Big Star location, had on-line debit prior to its purchase by A&P. The company decided not to remove the system because of its popularity with customers. Currently the store has two VeriFone Tranz 330s deployed at the front end, which dial directly to BUYPASS. This scenario, common service model option 2, is similar the diagram in Figure A.2.

According to a company official, several other A&P stores have on-line debit capability. While refusing to disclose the locations of the stores or the type of payment system used, the official did confirm that the equipment in those stores with on-line debit capability was EBT-ready.

Cub Foods operates six supermarkets in the Greater Atlanta study area. The stores use ICL 1800 ECR systems running the ICL Paypath electronic payments application. IVI T3L MSR/PIN pads are integrated into each register. All ECRs connect to a Unix-based PC located in the back of each store. On-line debit

transactions are sent through this processor to BUYPASS, which performs switching functions. This scenario, common service model option 2, is similar to that used by Shop 'N Save stores in the southeast New Hampshire study area, and is shown in Figure A.5.

Kroger, with 47 stores, is the largest food retailer with on-line debit capability. The company uses VeriFone Omni 490 terminals in a stand beside configuration. On-line debit transactions are switched to the Honor network by Midwest Payment Systems. This scenario, which is also similar to common service model option 2, is illustrated in Figure C.2.

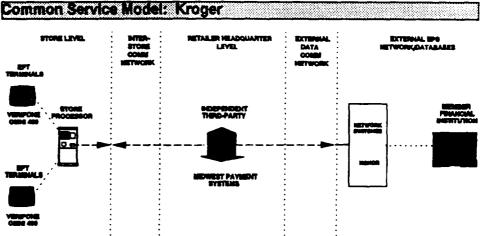


Figure C.2

Publix currently has two stores operating in the study area and is in the process of building additional stores. Both of the present locations accept debit cards using NCR 4430 MSR/PIN pads integrated to a PC-controlled IBM 4683 ECR system. All debit transactions are routed through Publix' proprietary network, Presto, to Honor. Figure C.3 depicts this scenario, common service model option 3.

Wayfield Foods has eight stores in the study area, half of which are equipped for on-line debit. The company plans to have terminals in all locations within the next 18 months. Wayfield stores have NCR 2127 ECRs in a "master/slave" configuration. One of three types of MSR/PIN pads is integrated to the ECRs: NCR 4430, VeriFone Pinstripe, or VeriFone Omni 490.

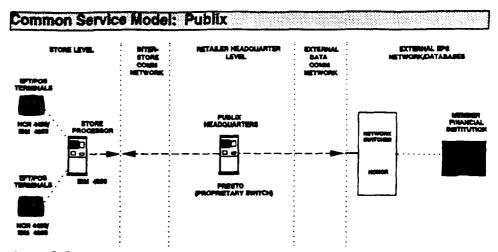
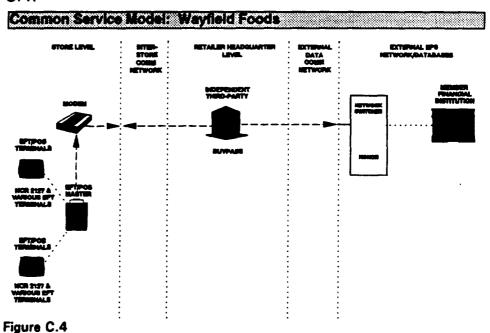


Figure C.3

Transactions are initiated at the terminal and pass through the inlane "slave" ECR to the "master" ECR located in the service booth. The "master" ECR then sends the transactions by means of a modem to BUYPASS, which relays them to Honor. This scenario, common service model option 2, is depicted in Figure C.4.



rigule C.4

Circle K and Stop 'N Go are two large convenience store chains in the Greater Atlanta study area that offer on-line debit. Both stores use common service model option 2, differing only in the make and model of on-line debit terminal. Each Circle K store has one VeriFone Tranz 330 which dials to BUYPASS for transaction switching. Stop 'N Go stores currently use Diebold React 330 terminals which dial to BUYPASS. The company will soon replace the Diebold terminals with the VeriFone Omni 480 model. Diagrams of both service models are similar to Figure A.2.

### EBT Readiness in Greater Atlanta

With 7.7 percent of food stamp retailers on-line debit equipped, the Greater Atlanta area ranks seventh of the twelve study areas with respect to level of terminal deployment. As shown in Figure C.5, these 7.7 percent of retailers redeem 28.5 percent of the food stamps in the study area.

Table C.1 represents the breakdown of retailers between on-line debit capable with required number of terminal deployments; on-line debit capable without the required number of terminal deployments; and not on-line capable for the four counties in the Greater Atlanta study area.

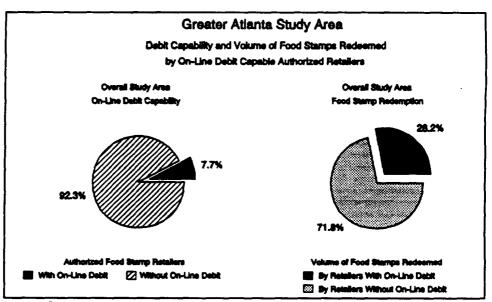


Figure C.5

Table C.1

Retailer Type	Level of Deployment <sup>1</sup>			
	Fuil	Part	None	Total
А	8	0	431	439
В	52	0	132	184
С	27	0	473	500
Total	87	0	1036	1123

#### Legend A:

Note that 431 of 1,123 (38.4 percent) of the food stamp authorized retailers without on-line debit will be required to have all lanes equipped for EBT.

Our research indicates that on-line debit is relatively new to the Greater Atlanta area. Therefore, it is expected that deployments of on-line debit terminals will increase substantially in the future. As mentioned previously, Bruno's Finer Foods and Winn Dixie are developing on-line debit systems. This should push other retailers in the area without on-line debit to deploy terminals in their stores.

### Maps

Immediately following this page are presented four color and eighteen monochromatic maps for this study area. The content and views depicted are described generically in the introduction to Technical Report #2.

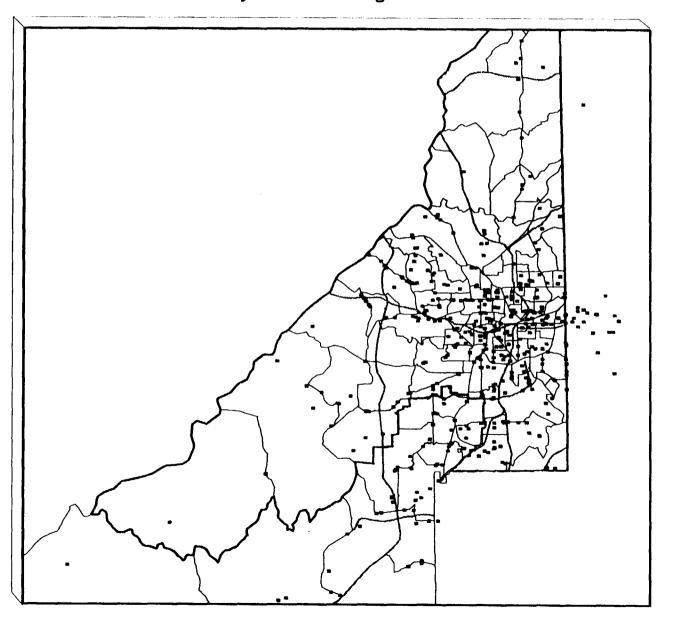
Avg. Monthly FS sales > 15% total food sales ⇒ all lanes must be deployed. All retailer types.

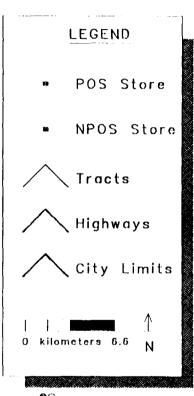
B: Supermarkets: Avg. monthly FS cales < 15% total food sales ⇒ one terminal for each \$11,000 in monthly FS volume up to # of lanes in store.

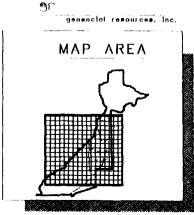
C: All others: Avg. monthly FS sales < 15% total food sales ⇒ one terminal for each \$8,000 in monthly FS volume up to # of lanes in store.

<sup>&</sup>lt;sup>1</sup> Retailers fully, partially, or not at all meeting the regulatory requirement for terminal deployment as set forth in 7 CFR \$274.12(g)(4)(ii).

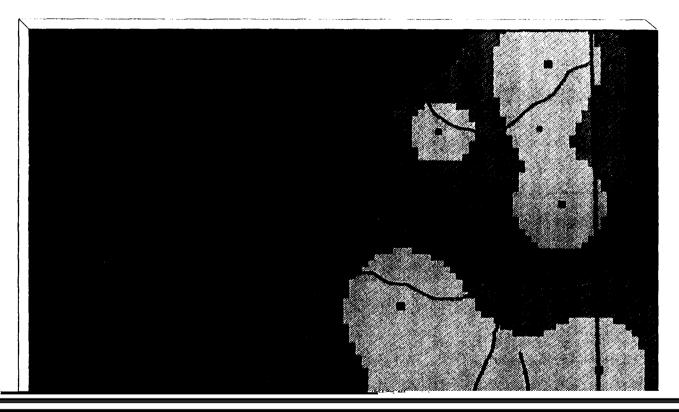
POS, Non-POS Retailers in FS Program: Fulton County, Georgia

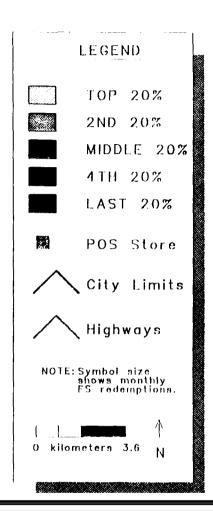




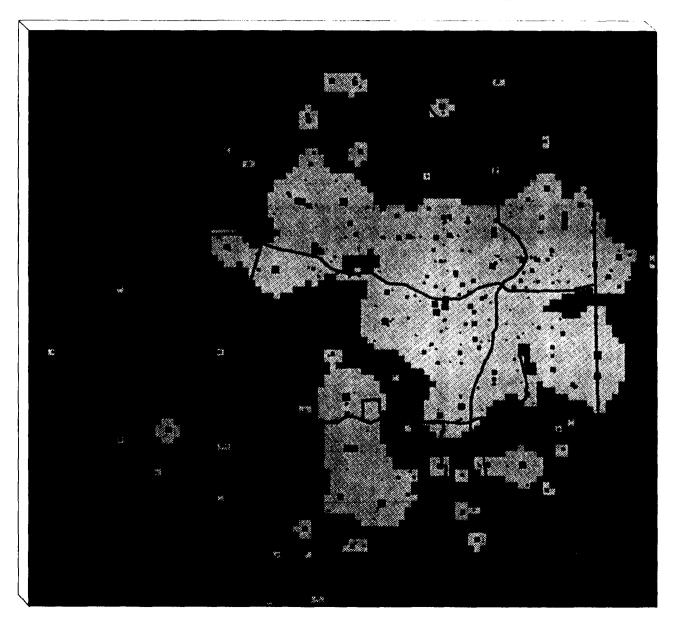


## POS Availability Model: FSP Stores in Atlanta Area





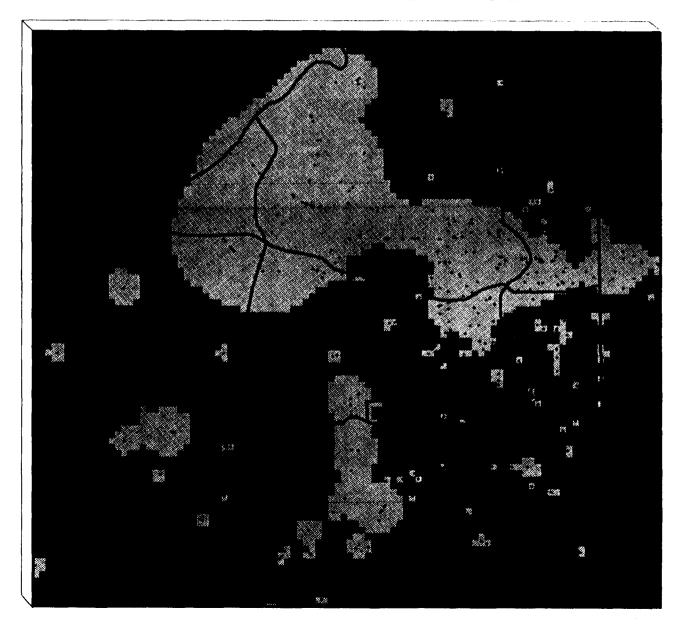
### NPOS Availability Model: FSP Stores in Atlanta Area

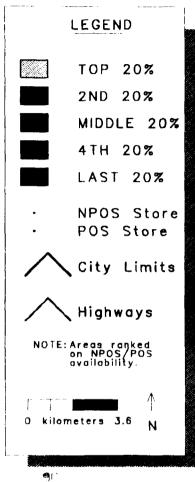


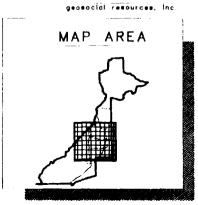
## LEGEND TOP 20% 2ND 20% MIDDLE 20% 4TH 20% LAST 20% NPOS Store City Limits Highways NOTE: Symbol size shows monthly FS redemptions. 0 kilometers 3.6 geosocial resources. Inc.



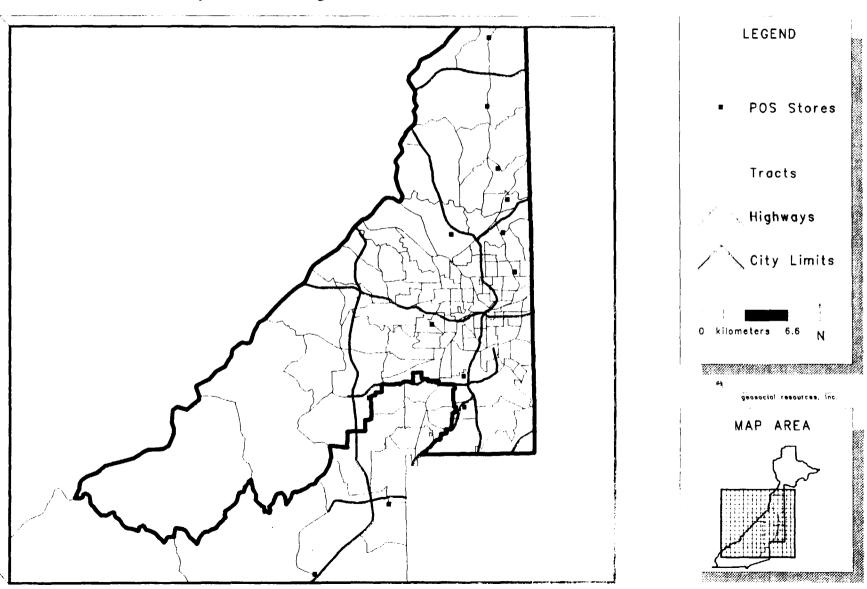
# Model of NPOS without POS: FSP Stores in Atlanta Area



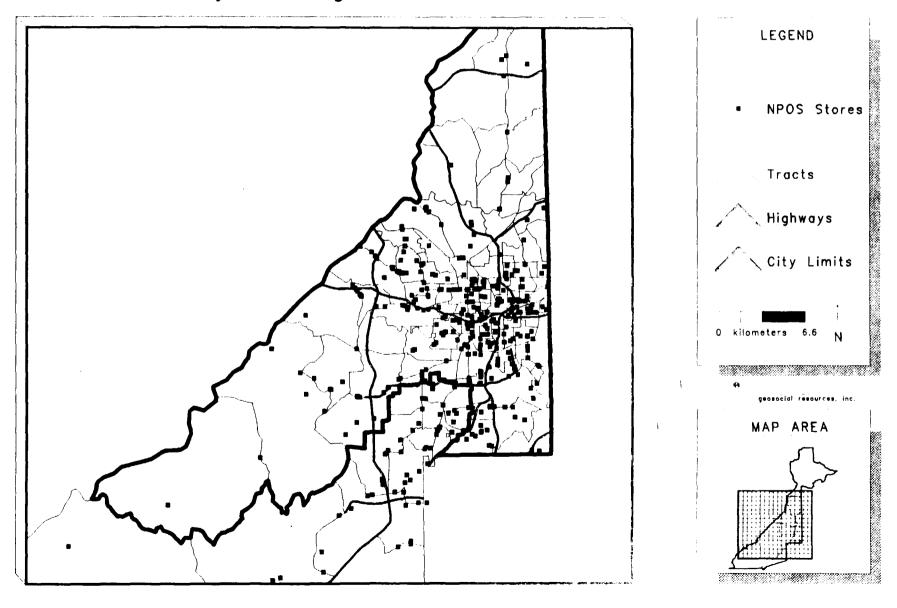




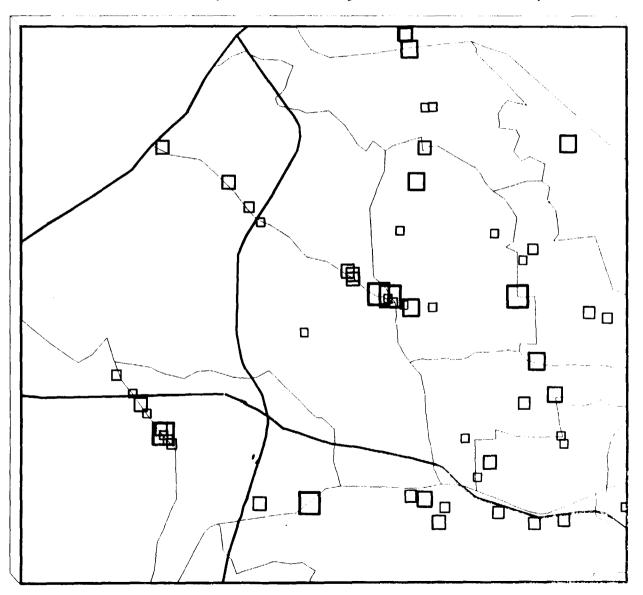
POS-Equipped Retailers in FS Program: Fulton County, Georgia

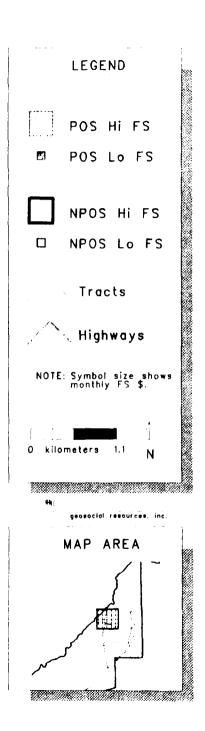


# Non-POS-Equipped Retailers in FS Program: Fulton County, Georgia

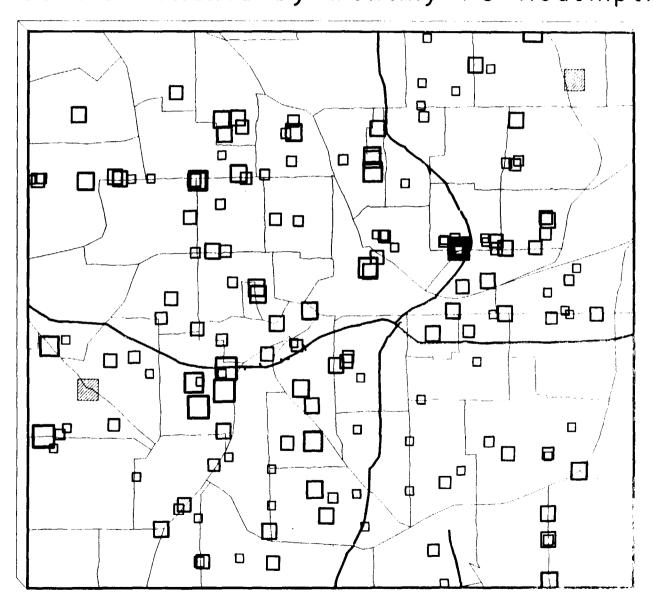


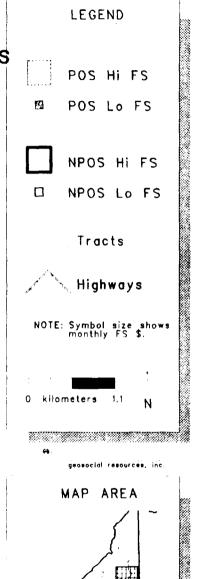
# POS and Non-POS FSP Retailers NE Atlanta by Monthly FS Redemptions



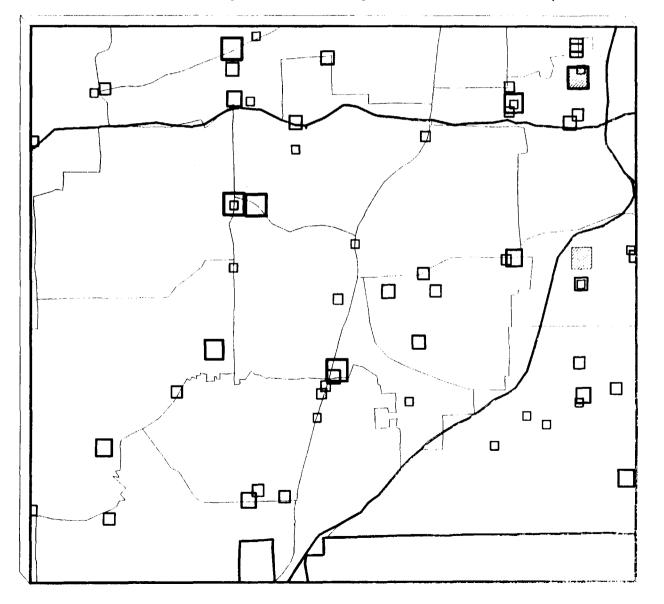


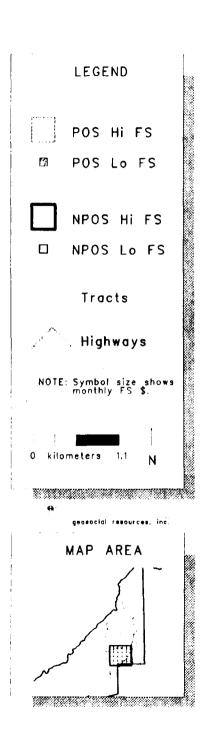
POS and Non-POS FSP Retailers
Central Atlanta by Monthly FS Redemptions



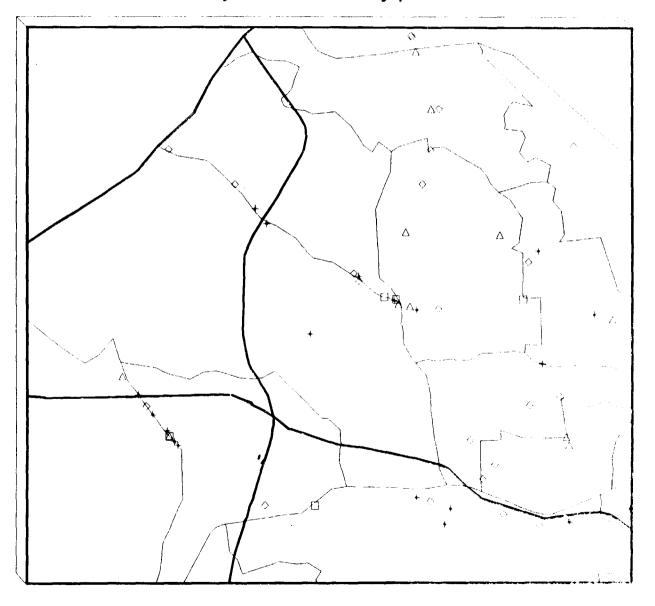


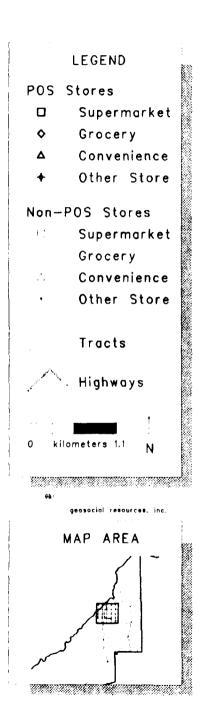
POS and Non-POS FSP Retailers
SW Atlanta by Monthly FS Redemptions



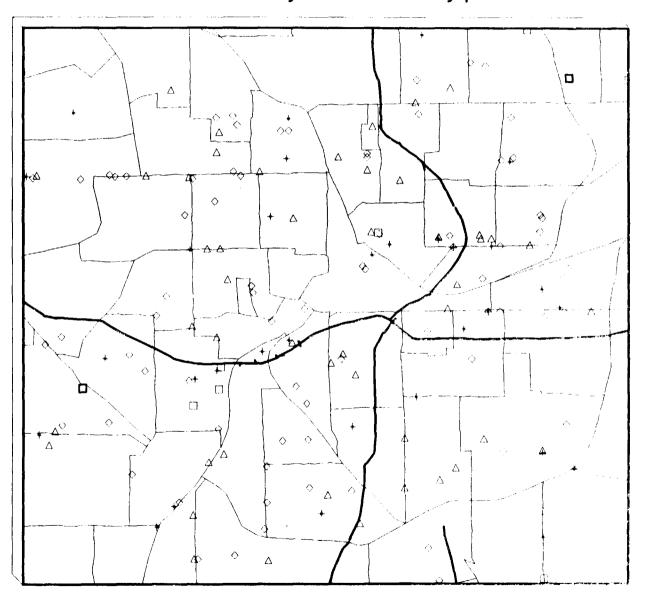


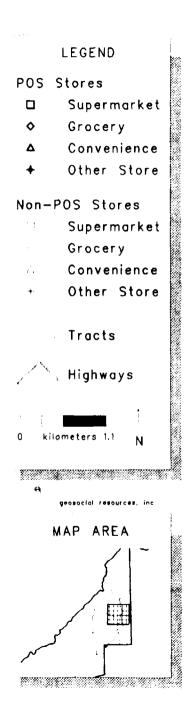
# POS and Non-POS FSP Retailers NE Atlanta by Store Type



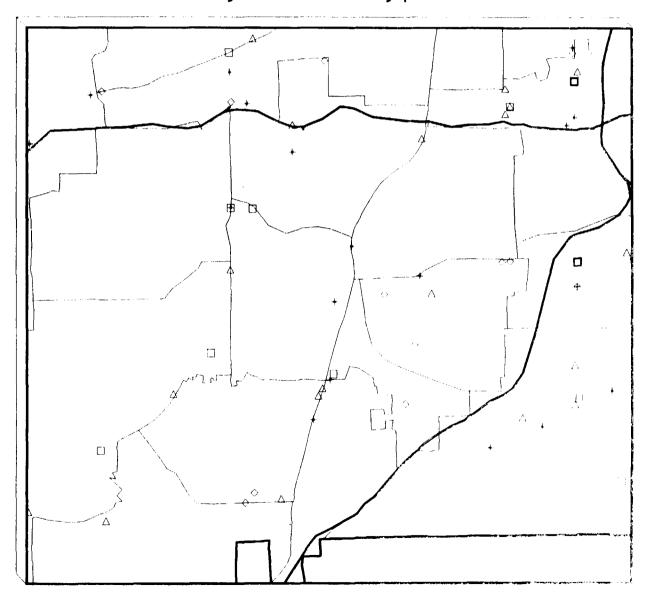


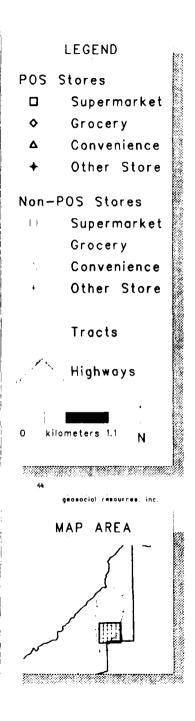
# POS and Non-POS FSP Retailers Central Atlanta by Store Type



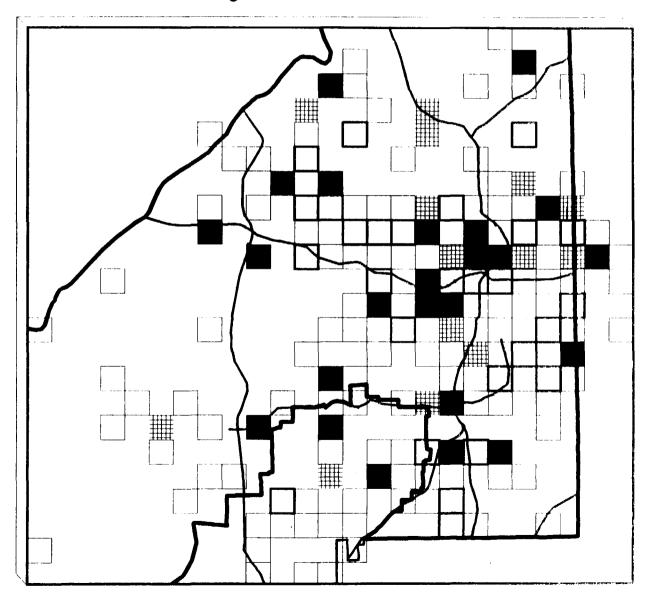


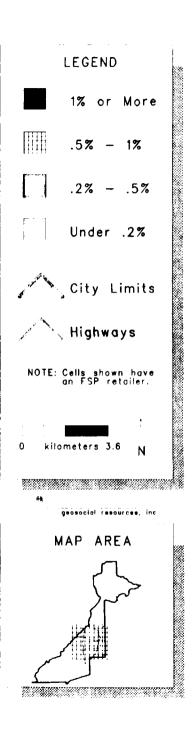
# POS and Non-POS FSP Retailers SW Atlanta by Store Type



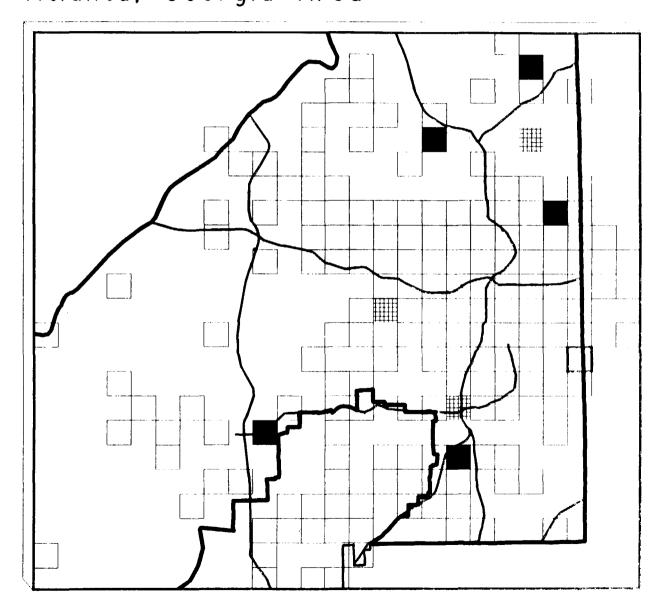


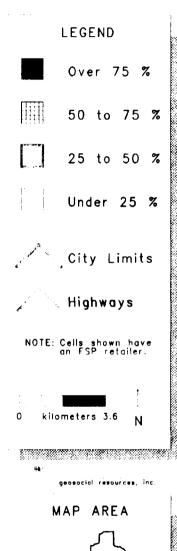
## Percentage of County FS \$: Atlanta, Georgia Area

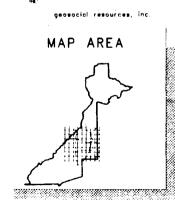




## POS FS \$ as % Total FS \$: Atlanta, Georgia Area

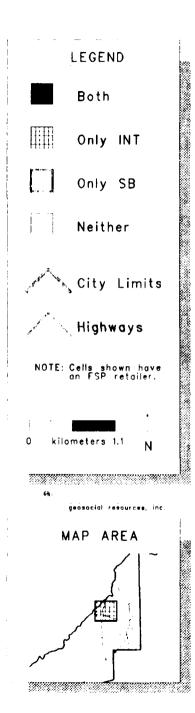




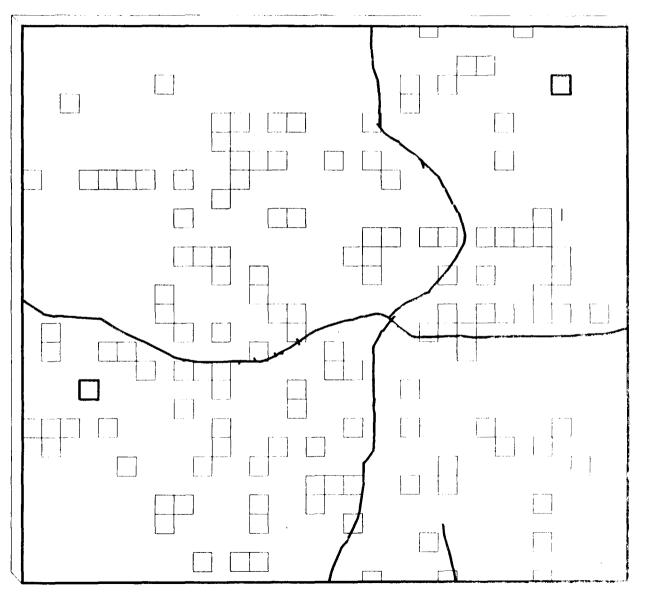


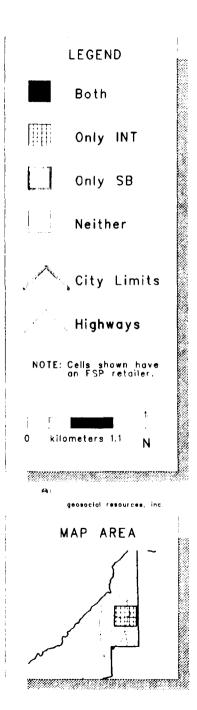
# Integrated and Stand-Beside POS: NE Atlanta Area



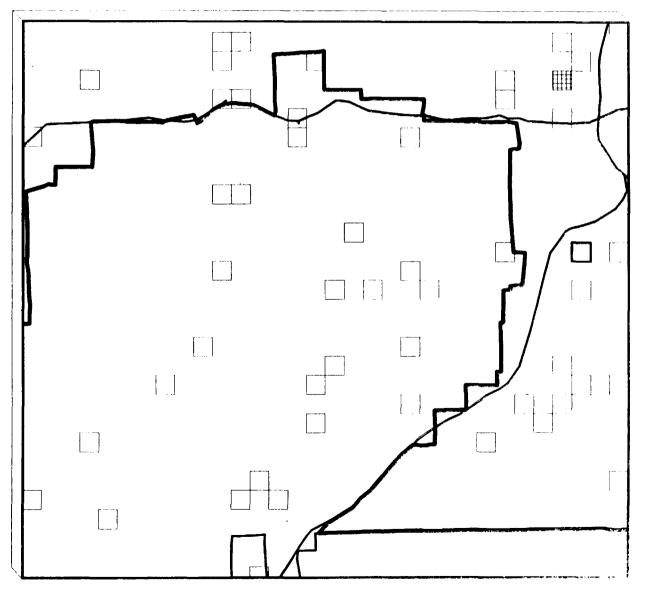


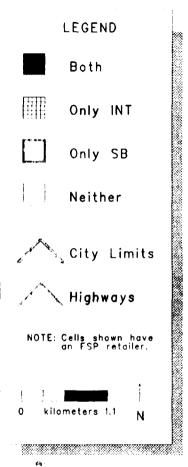
## Integrated and Stand-Beside POS: Central Atlanta Area

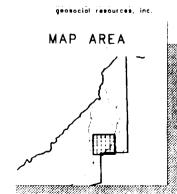




Integrated and Stand-Beside POS: SW Atlanta Area

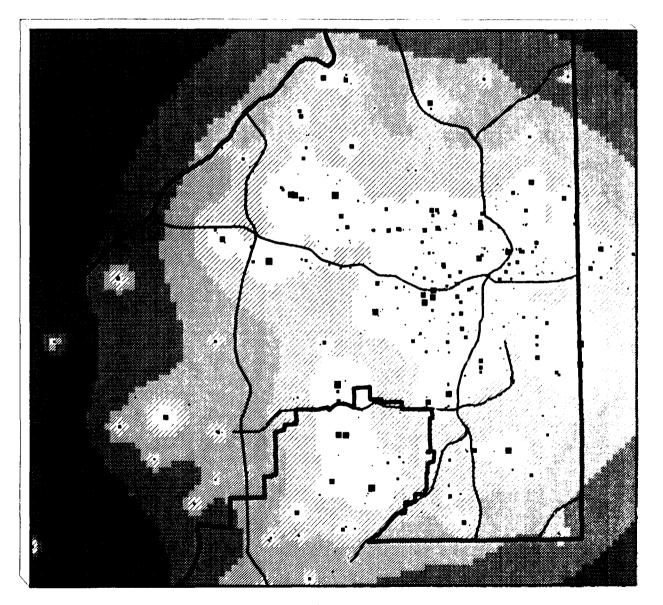


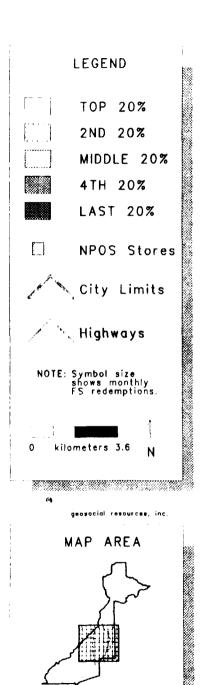




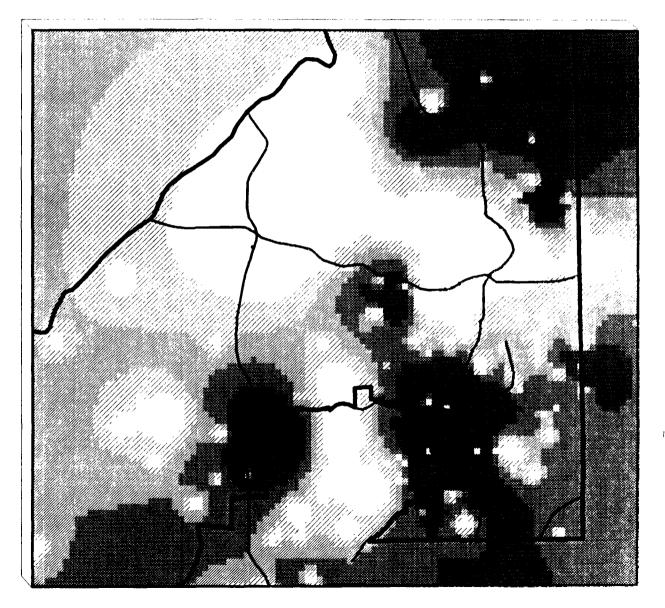
## POS Availability Surface Model: LEGEND FSP Stores in Atlanta Area TOP 20% 2ND 20% MIDDLE 20% 4TH 20% LAST 20% POS Stores 🦯 Gity Limits Highways

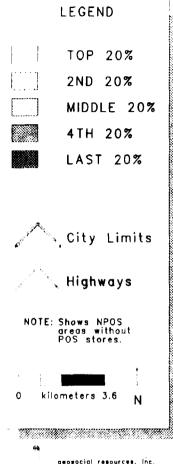
## NPOS Availability Surface Model: FSP Stores in Atlanta Area

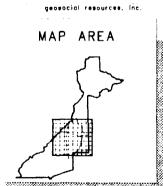




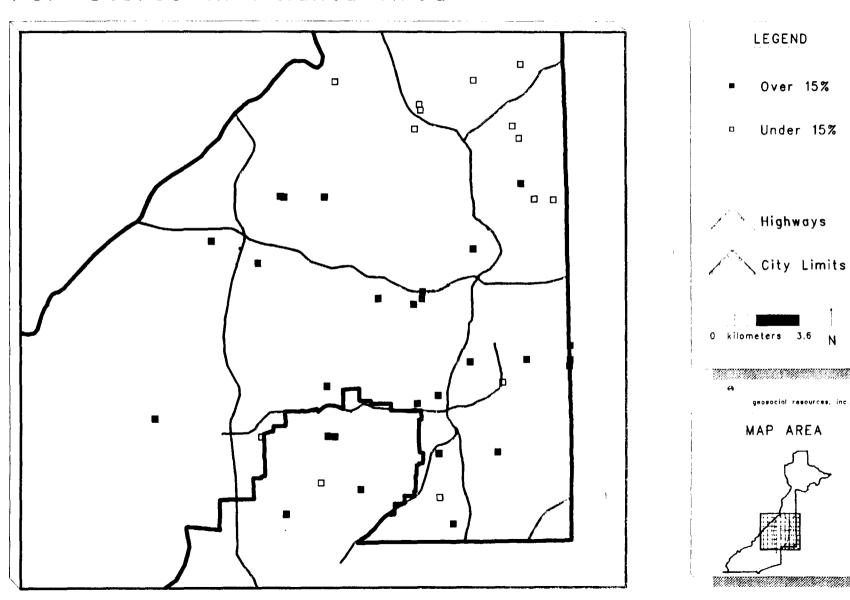
## Model of NPOS without POS: FSP Stores in Atlanta Area



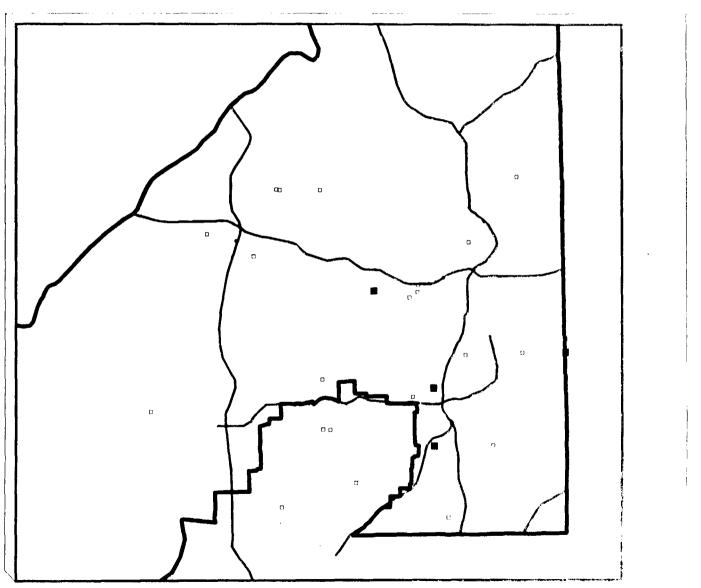


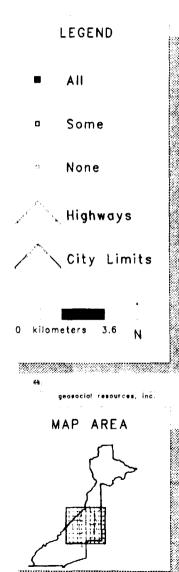


## Supermarkets: FS as % of Food Sales FSP Stores in Atlanta Area



## POS Lanes in Supermarkets with 15% on FS FSP Stores in Atlanta Area





### Micro Focus Charleston County

The Charleston study area consists of Charleston County, South Carolina. Development of on-line debit in this study area has paralleled that of the Greater Atlanta area. This is largely due to the fact that the same regional EFT network, Honor, dominates in both markets. In addition, many of the large food retailers operate in both study areas. These retailers include Circle K, Majik Market, Stop 'N Go, Winn-Dixie, and Piggly Wiggly. The first four have a larger presence in the Greater Atlanta study area while Piggly Wiggly has more stores in Charleston County. All of these retailers are in the same stage of development with respect to online debit in Charleston County as they are in the Greater Atlanta study area.

The only retailers in this group with on-line debit capability are Circle K and Stop 'N Go. Circle K has 12 stores in the study area with on-line debit capability. Like those in the Atlanta area, these stores use VeriFone Tranz 330 terminals to initiate debit transactions and BUYPASS for transaction switching. Stop 'N Go has two locations in the study area which offer on-line debit. These stores use the Diebold React 330 terminals mentioned earlier in the discussion of the Greater Atlanta study area.

Figure C.6 depicts these 14 retailers as a percentage of all food stamp authorized retailers in the study area.

Other major retailers in the Charleston study area include Bi-Lo, Food Lion, Harris Teeter, and The Pantry. None of these retailers currently accepts debit cards for purchases, but Harris Teeter is expected to go on-line a some point in early 1994.

Harris Teeter is in the process of developing a pilot in Athens, GA. This location will use IVI C2000 MSR/PIN pads in an integrated configuration. These same terminals will be deployed in the remaining 140 Harris Teeter locations (of which four are in the study area) when on-line debit is rolled out chain-wide. Our research efforts were unsuccessful in gathering additional information on the program.

Bi-Lo has one pilot store offering on-line debit, located in the Charlotte, NC area. The company will evaluate the success of

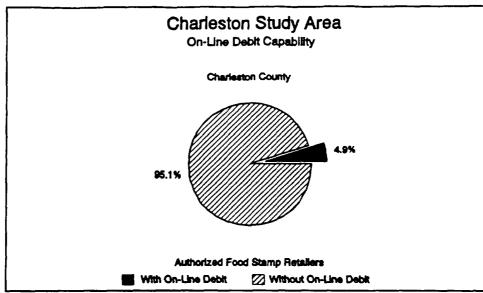


Figure C.6 (data as of November 1993)

that system before deciding on a chain-wide roll-out. The pilot store uses IVI T3L terminals integrated with an IBM 4683 cash register system. Transactions are routed from the T3Ls through the 4683s to a IBM 4680 in-store processor. This processor sends the transaction on to a host computer at company headquarters. From here the transactions are sent to BUYPASS for switching to Honor. Bi-Lo has no immediate plans to install an on-line debit system in the Charleston market. However, if EBT were to be implemented in this area before the Bi-Lo stores had on-line debit, the company would push forward with plans for an on-line debit system rather that accept a state-supplied system.

The Pantry is considering the option of accepting debit cards for purchases but has no immediate plans to deploy a system. They are currently replacing the ECRs in some stores with models that will allow the integration of a MSR/PIN pad device. Scrip will be offered in the near future.

As was discussed in the section on the Greater Atlanta study area, Winn Dixie is currently developing an on-line debit system. Food Lion has no plans for on-line debit in this area.

### EBT Readiness in Charleston County

Currently, 14 of 285 (4.9 percent) of food stamp authorized retailers in the Charleston study area have on-line debit. This places Charleston County eighth among the twelve study areas with respect to level of terminal deployment. Figure C.7 shows that these retailers account for 0.47 percent of food stamp redemptions in the study area.

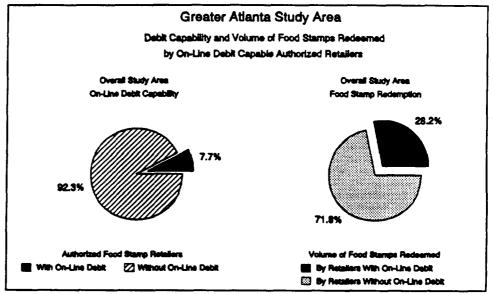


Figure C.7

Table C.2 shows the breakdown of retailers by food stamp redemption volume and terminal deployment level.

Table C.2

Retailer Type	Level of Deployment <sup>1</sup>			
	Full	Part	None	Total
Α	0	1	95	96
В	0	0	39	39
С	13	0	137	150
Total	13	1	271	285

### Legend

Note 95 of 285 (33.3 percent) of type "A" retailers without online debit require full terminal deployment. This percentage is larger than many of the other study areas due to the fact that no large supermarket chains have installed on-line debit systems in the Charleston study area.

As was previously mentioned, the low level of deployments is largely due to the relatively new arrival of on-line debit to the area. The eventual addition of Bi-Lo, Harris Teeter, The Pantry, and Winn Dixie to the list of on-line debit capable retailers would bring the number of stores in the study area accepting debit cards to 35.

### Changes Since Snapshot

Recent research has indicated that six of the Circle K stores offering on line debit in the Charleston study area have closed. This reduces the number of food stamp authorized retailers with on-line debit to eight (2.8 percent), and drops the Charleston study area to tenth among the twelve study areas with respect to level of terminal deployment. Figure C.8 illustrates this information along with the percent of Charleston County food stamp redemptions that these retailers account for.

### Maps

Avg. Monthly FS sales > 15% total food sales = all lanes must be deployed. All retailer types.

B: Supermarkets: Avg. monthly FS sales < 15% total food sales ⇒ one terminal for each \$11,000 in monthly FS volume up to # of lanes in store.

C: All others: Avg. monthly FS sales < 15% total food sales ⇒ one terminal for each \$8,000 in monthly FS volume up to # of lanes in store.</p>

<sup>&</sup>lt;sup>1</sup> Retailers fully, partially, or not at all meeting the regulatory requirement for terminal deployment as set forth in 7 CFR \$274.12(g)(4)(ii).

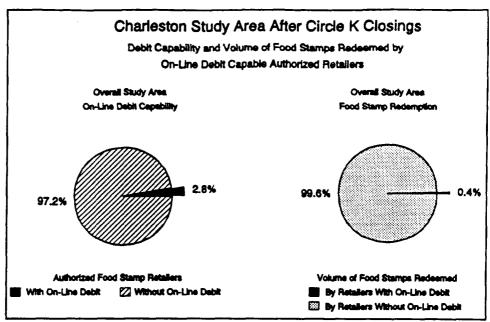
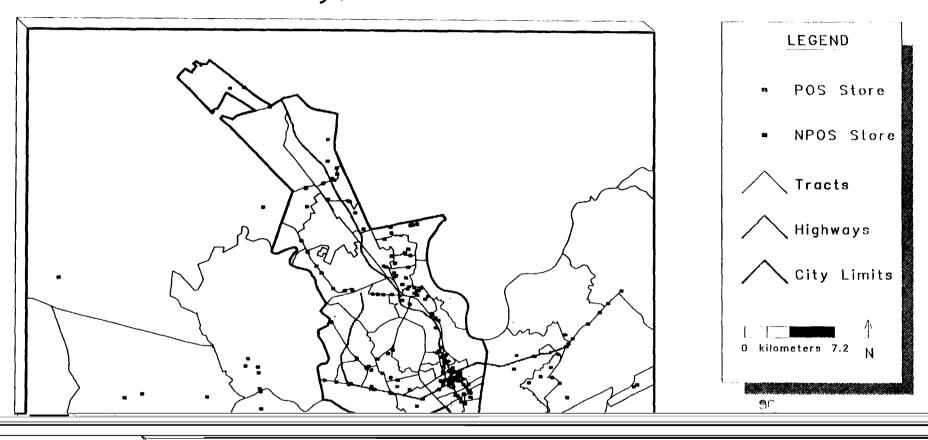


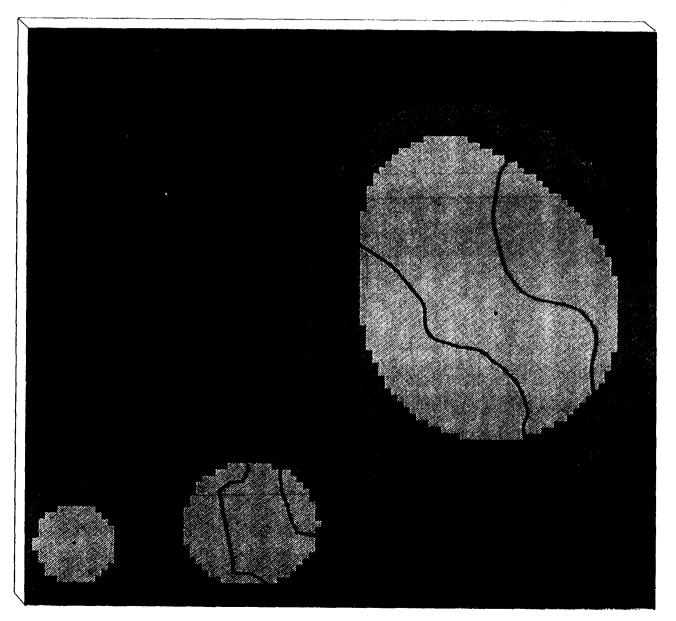
Figure C.8

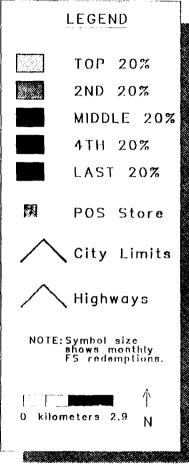
Immediately following this page are presented four color and twelve monochromatic maps for this study area. The content and views depicted are described generically in the introduction to Technical Report #2.

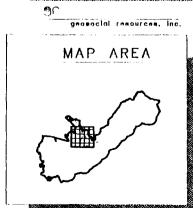
POS, Non-POS Retailers in FS Program: Charleston County, SC



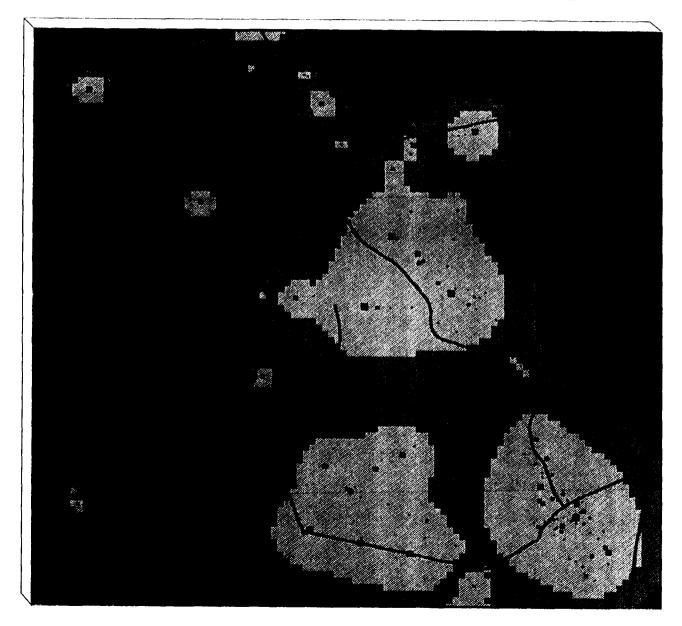
# POS Availability Model: FSP Stores in Charleston Area

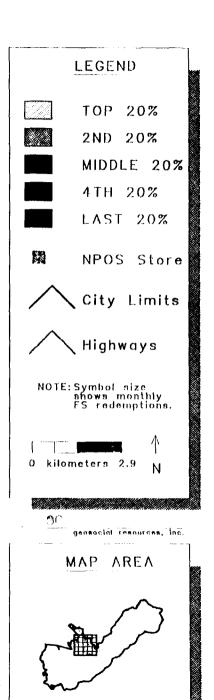






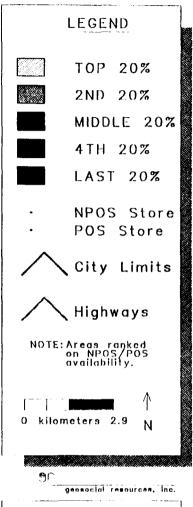
## NPOS Availability Model: FSP Stores in Charleston Area





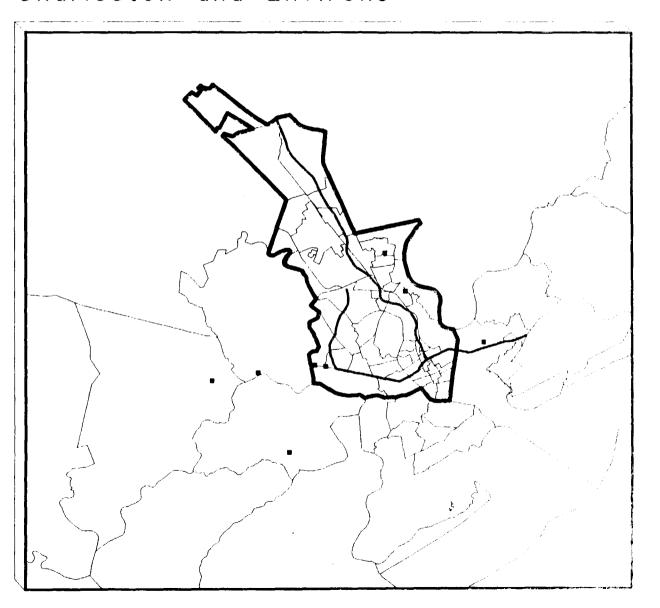
## Model of NPOS without POS: FSP Stores in Charleston Area

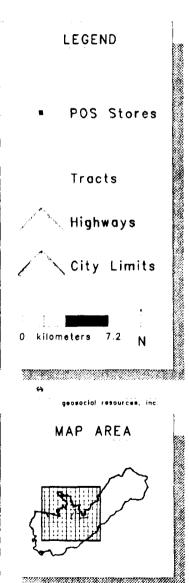




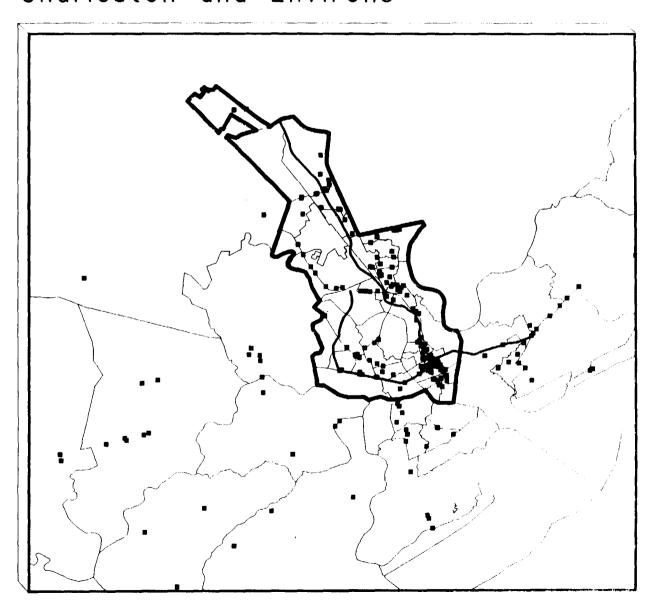


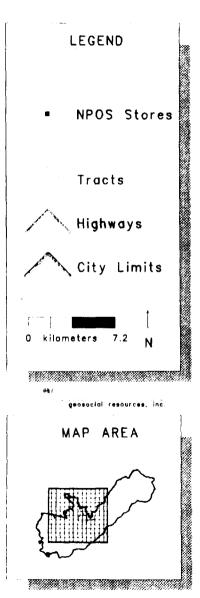
### POS-Equipped Retailers in FS Program: Charleston and Environs



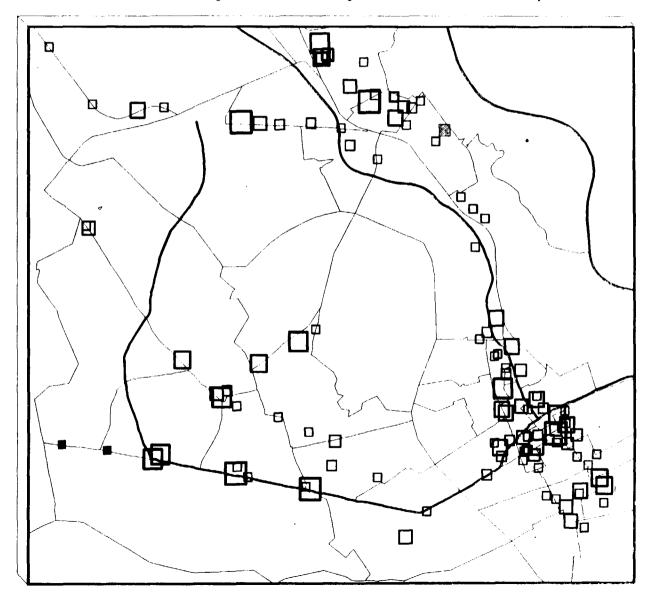


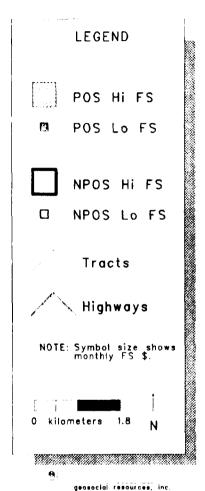
#### Non-POS-Equipped Retailers in FS Program: Charleston and Environs

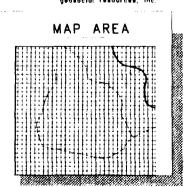




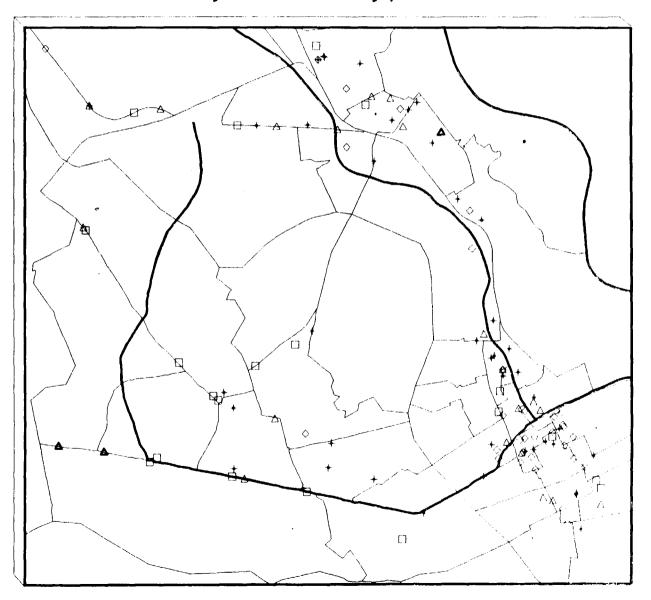
## POS and Non-POS FSP Retailers Charleston by Monthly FS Redemptions



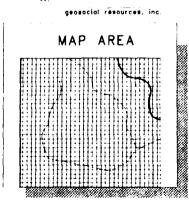




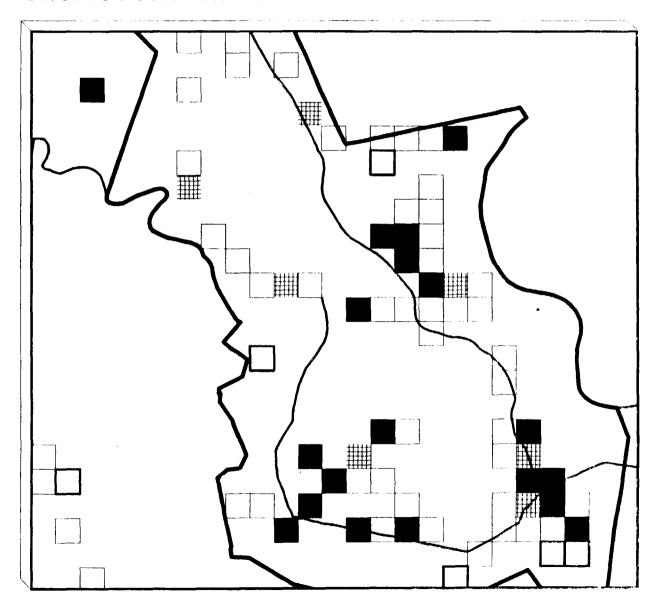
# POS and Non-POS FSP Retailers Charleston by Store Type

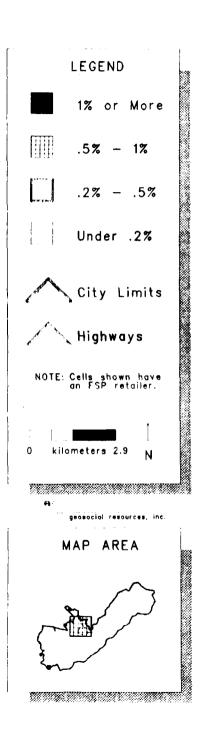


#### **LEGEND** POS Stores Supermarket Grocery Convenience Other Store Non-POS Stores Supermarket Grocery Convenience Other Store Tracts 📐 Highways kilometers 1.8



#### Percentage of County FS \$: Charleston Area

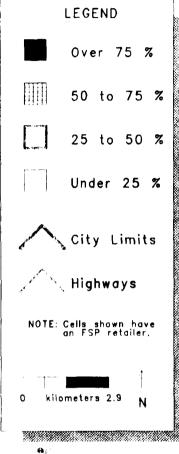




POS FS \$ as % Total FS \$:

Charleston Area

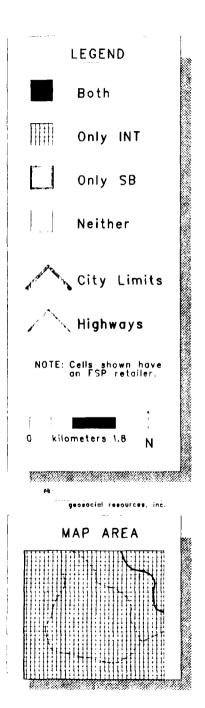






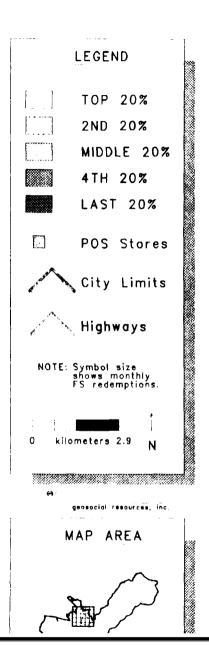
### Integrated and Stand-Beside POS: Charleston Area





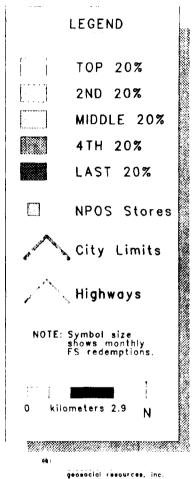
## POS Availability Surface Model: FSP Stores in Charleston

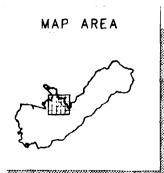




## NPOS Availability Surface Model: FSP Stores in Charleston

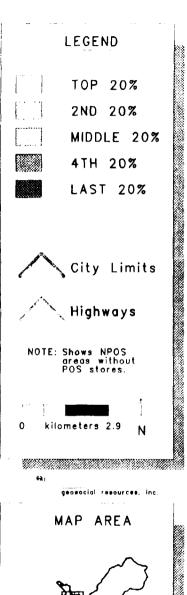




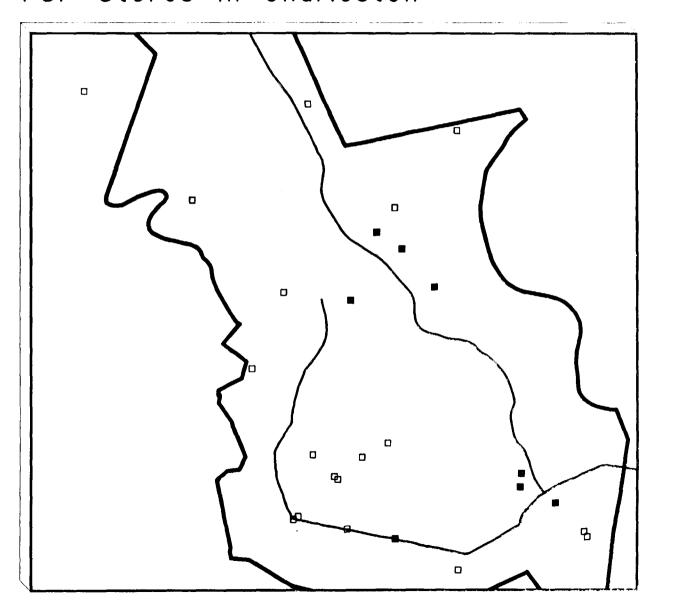


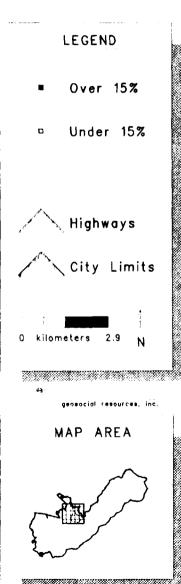
## Model of NPOS without POS: FSP Stores in Charleston



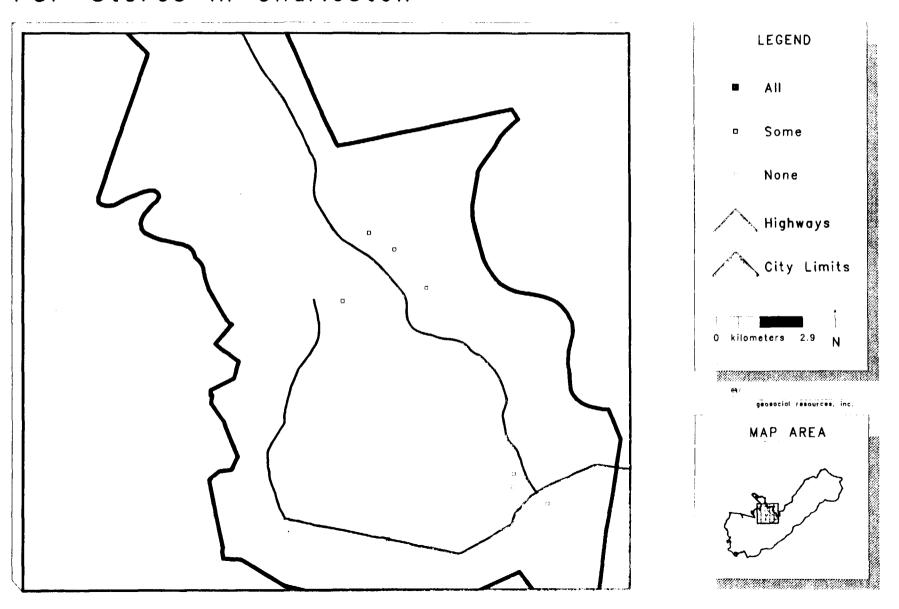


### Supermarkets: FS as % of Food Sales FSP Stores in Charleston





POS Lanes in Supermarkets with 15% on FS FSP Stores in Charleston



#### D. MIDWEST REGION

The Food and Nutrition Service's Midwest Region includes Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. Two (and part of a third) of the twelve study areas specified by FNS are located in this region. They are Cuyahoga County, Ohio, which includes the City of Cleveland, and Cook and Will Counties in Illinois, which include the City of Chicago and its southern suburbs. Madison and St. Clair



Counties in southern Illinois are also part of an FNS study areas, but these counties are included below with St. Louis City and County in Section E, Mountain Plains Region.

The EFT network landscape in Cuyahoga County (Cleveland) recently underwent a transformation as the two prominent EFT networks in the area merged with the Wilmington, Delaware-based MAC network to form Electronic Payment Services. The two Ohio networks are Cincinnati-based Owl and North Olmstead-based Green Machine. Owl and Green Machine continue to switch through Green Machine's facility in North Olmstead; eventually all transactions will be switched by the MAC processing facility in Wilmington. The midwest switching facility will be retained as a hot site backup.

In the Cook and Will (South Chicago) study area the regional network situation is less complicated. Here one network, Chicago-based Cash Station, dominates<sup>6</sup>. This network uses Midwest Payment Systems to switch most on-line debit and ATM transactions.

<sup>&</sup>lt;sup>6</sup> EFT Illinois also has a presence in the South Chicago study area but according to an official at the network they have no unique locations from Cash Station.

Table D.1 lists switch fees for the MAC and Cash Station networks.

Table D.1

Network	Fee		
MAC	<ul> <li>\$.0510 switch fee paid by issuer based on volume</li> <li>\$.045 switch fee paid by acquirer</li> </ul>		
Cash Station	<ul> <li>\$.06 switch fee paid by issuer</li> <li>\$.10 switch fee paid by acquirer</li> </ul>		

#### Research Methodology

Obtaining a list of food stamp authorized retailers with on-line debit in the Cleveland and South Chicago study areas consisted of:

- contacting the EFT networks with presence in the study areas, (Money Station, Green Machine, and Owl in Cleveland and Cash Station in South Chicago) and obtaining lists of retailers accepting that network's debit card for purchases;
- comparing these lists to the FNS-supplied list of food stamp authorized retailers in each study area. The result was a data set of food stamp authorized retailers accepting debit cards; and
- contacting the retailers on the list to gather information on the systems used to accept debit cards for purchases.

Money Station provided a hard copy list of retailers. A verbal list was obtained from Owl. Society Bank, owners of the Green Machine network, provided a list of all on-line debit retailers accepting their cards. There was much overlap among these lists, which were combined to yield 43 food stamp authorized retailers in the Cleveland study area with on-line debit capability.

Cash Station in the South Chicago study area provided a hard copy list of retailers accepting debit cards for purchases.

#### Micro Focus Cuyahoga County

Cuyahoga is the most populous county in the State of Ohio. It is located on the southern shore of Lake Erie and includes the City of Cleveland. There are 1,207 food stamp authorized retailers in the area, of which 43 accept debit cards at the point of sale. Figure D.1 depicts this number as a percent of all food stamp authorized retailers in Cuyahoga County.

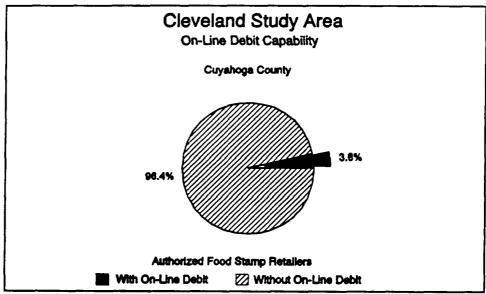


Figure D.1 (data as of October 1993)

Included in the 43 retailers are seven independently-owned Convenient Food Marts, 21 FINAST supermarkets, and seven Heinen's.

Several of the major food stamp authorized retail chains do not currently have on-line debit capability. They include:

- Company-owned Convenient Food Mart stores;
- Dairy Mart, a large convenience store chain with 92 locations in the study area;
- Discount Drug, with 12 food stamp authorized locations in Cuyahoga County;

- Marc's, a discount "variety store" chain selling health and beauty aids as well as some food items;
- Reiser Foods, which operates 29 Rini, Rego, and Rini/Rego
   Supermarkets in the study area; and
- Rite Aid, a drug store chain.

Convenient Food Mart Stores are both company and independently-owned. Several of the independently owned stores have on-line debit capability. However, Convenient Food Mart recently decided against deploying on-line debit terminals in the company-owned stores.

Other retailers responded as follows:

- Officials at Dairy Mart, Reiser, and Rite Aid mentioned the possibility of implementing an on-line debit system in the near future.
- A contact at Marc's stated that because of the "deep discount" nature of their stores, debit would not be costeffective.
- Discount Drug was unable to be reached for comment.

#### Common Service Models Encountered

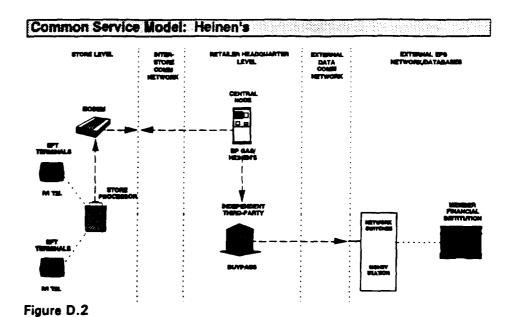
Of the 43 on-line debit capable and food stamp authorized retailers in the study area, 28 were either FINAST or Heinen's stores. The remaining 15 were split between small chains and single-store operations.

Seven independently-owned Convenient Food Mart stores accept debit cards for purchases using stand beside VeriFone Tranz 330 terminals supplied by Society bank. The terminals dial to BUYPASS in order to switch transactions to the networks. This scenario is commonly found in one and two lane convenience stores and is similar to the service model diagrammed in Figure A.2.

FINAST, with 21 locations in Cuyahoga County, is the largest supermarket chain with on-line debit capability in the Cleveland study area. Each store is equipped with one of two configurations for initiating on-line debit transactions. The first, an older system, uses stand beside Diebold 1042 terminals connected by means of a LAN to a back room Diebold 1001 concentrator. The second system employs NCR 4430 MSR/PIN pads. The terminals are integrated into NCR 7000 series ECRs which connect by a LAN to an in-store processor. Transactions are picked up at the store level by Midwest Payment Systems and switched to Money Station or Green Machine. Both scenarios correspond to common service model option 2.

The diagram of the first service model is similar to the ACME scenario in the Essex County, New Jersey and New Castle County, Delaware study areas (Figure B.3). The only differences are that Diebold 1042 terminals are used instead of the Concord LINX 1075s and the Money Station and Green Machine networks are used instead of MAC, NYCE, and MOST. The second scenario closely resembles that found in Shop 'N Save stores in the southeastern New Hampshire study area (Figure A.4).

The seven Heinen's locations have stand beside IVI T2L terminals connected to a processor located in each store's office. Transactions are sent by modem to a central node shared with BP Gas which relays the transactions onto BUYPASS. BUYPASS switches Heinen's transactions to Money Station only. This scenario, common service model option 2, is diagrammed in Figure D.2.



EBT Readiness in Cuyahoga County

The 43 retailers in the Cleveland study area account for 3.6 percent of the 1207 food stamp authorized retailers. However, these 3.6 percent, largely supermarkets, account for 28.4 percent of the food stamp redemptions in the study area. This places the study area sixth among the twelve study areas with respect to percentage of food stamp redemptions accounted for by on-line debit equipped retailers. Figure D.3 compares deployment levels with redemption levels.

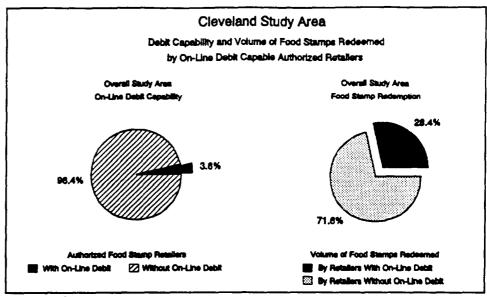


Figure D.3

Table D.2 shows the distribution among the 1207 food stamp authorized retailers of those with on-line debit and the required level of terminal deployment, those with on-line debit and without the required level of terminal deployment, and those without on-line debit.

Table D.2

Retailer Type	Level of Deployment <sup>1</sup>			
	Full	Part	None	Total
Α	8	2	513	523
В	26	0	65	91
С	7	0	586	593
Total	41	2	1164	1207

Legend

Avg. Monthly FS sales > 15% total food sales = all lanes must be deployed. All retailer types.

From this table it is clear that the Cleveland study area will require

B: Supermarkets: Avg. monthly FS cales < 15% total food sales ⇒ one terminal for each \$11,000 in monthly FS volume up to # of lanes in store.

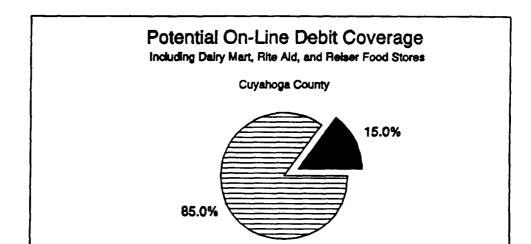
C: All others: Avg. monthly FS sales < 15% total food sales = one terminal for each \$8,000 in monthly FS volume up to # of lanes in store.

<sup>&</sup>lt;sup>1</sup> Retailers fully, partially, or not at all meeting the regulatory requirement for terminal deployment as set forth in 7 CFR \$274.12(g)(4)(ii).

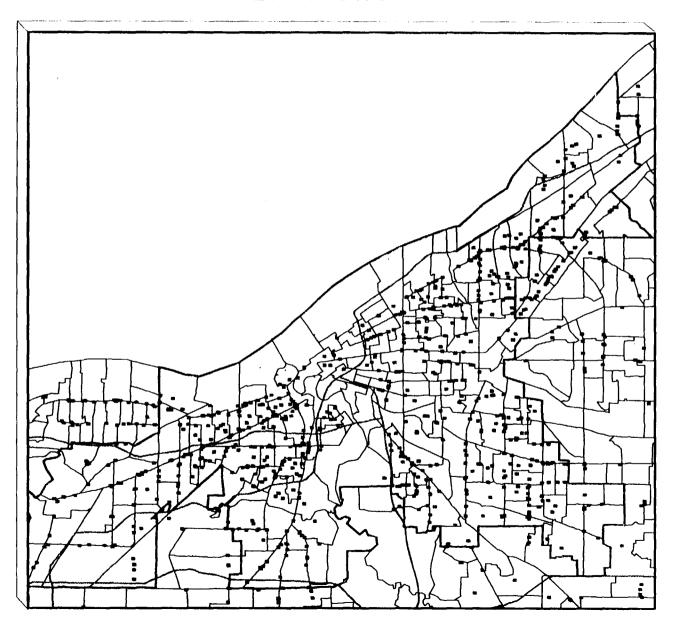
extensive terminal deployment for EBT, especially in category A retailers. The majority of these deployments will probably have to be state-initiated. However, some may be undertaken by retailers. Figure D. 4 shows the level of notestial terminal deployment in the

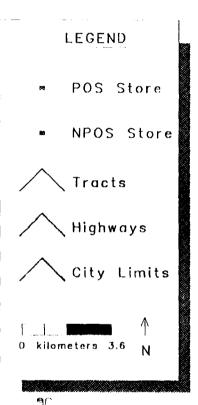
on-line debit systems.

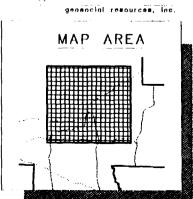
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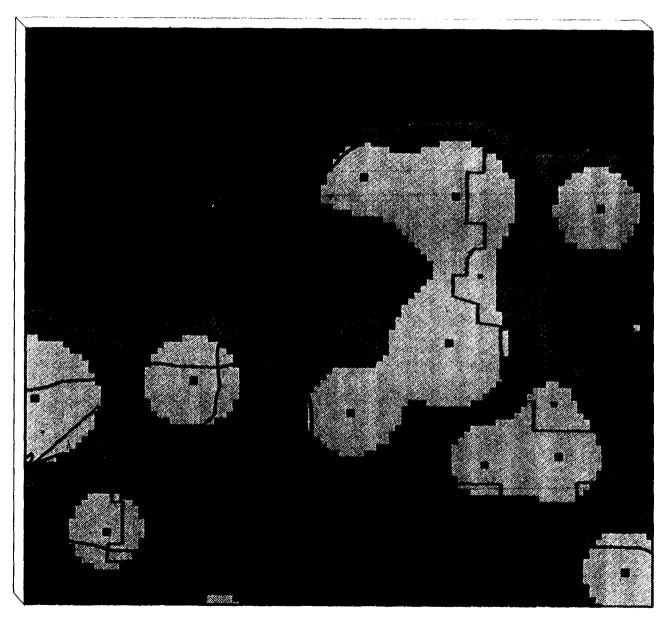
## POS, Non-POS Retailers in FS Program: Cleveland & Environs

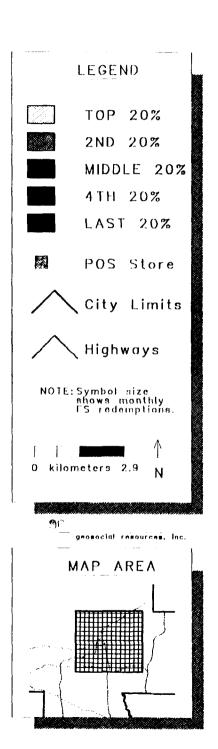




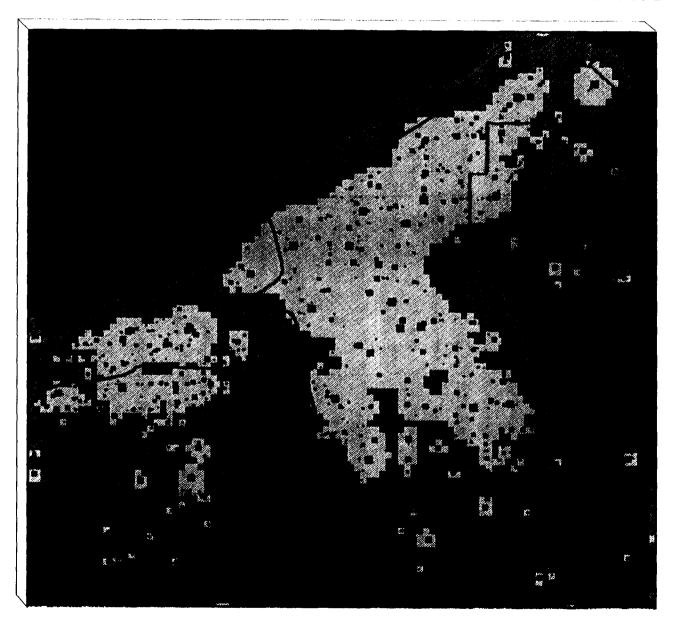


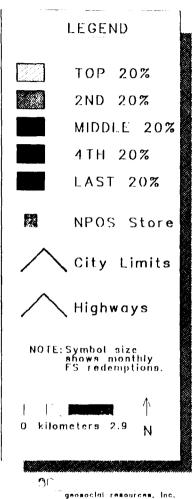
### POS Availability Model: FSP Stores in Cleveland & Environs

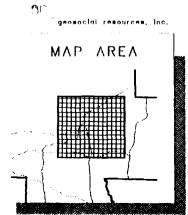




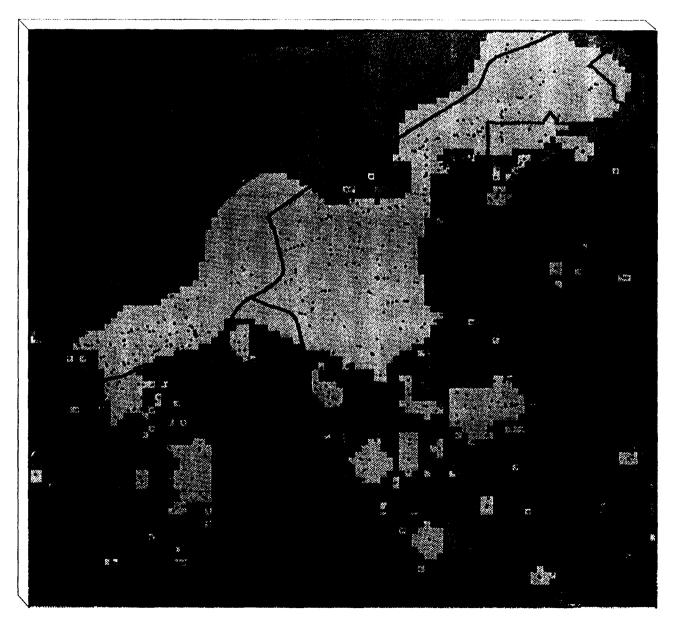
### NPOS Availability Model: FSP Stores in Cleveland & Environs

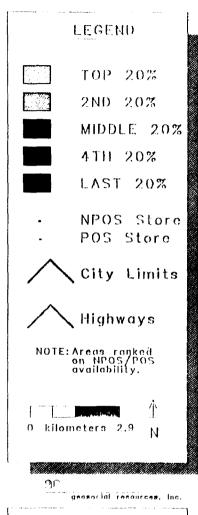


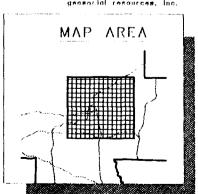




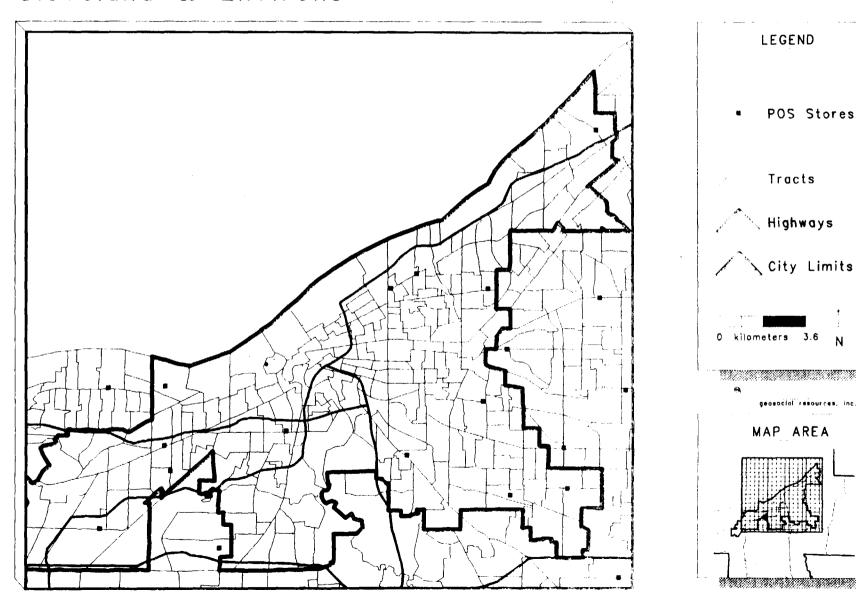
## Model of NPOS without POS: FNS Stores in Cleveland & Environs



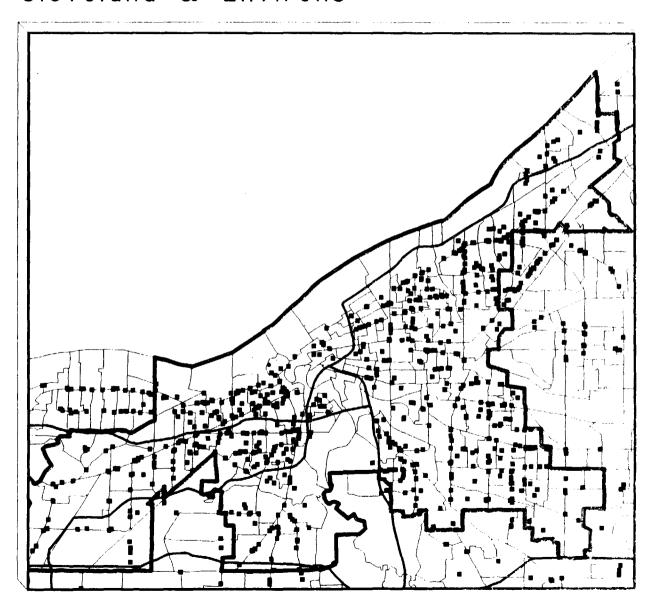


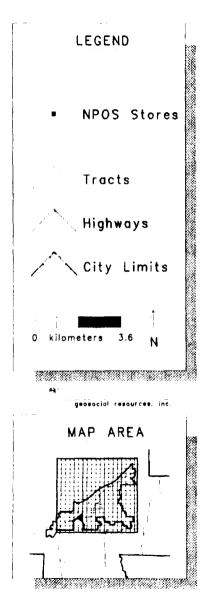


### POS-Equipped Retailers in FS Program: Cleveland & Environs

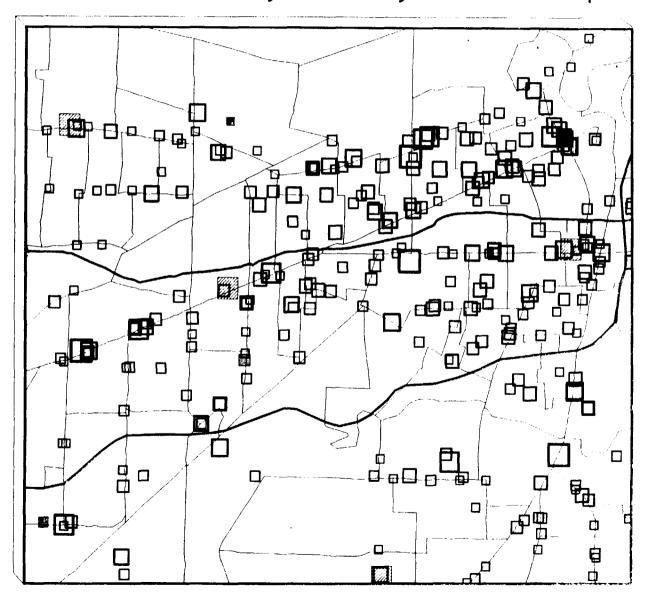


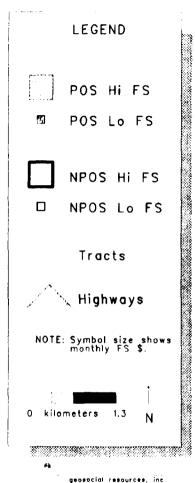
### Non-POS-Equipped Retailers in FS Program: Cleveland & Environs

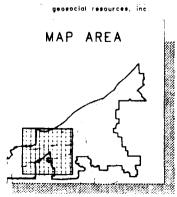




POS and Non-POS FSP Retailers
SW Cleveland, by Monthly FS Redemptions

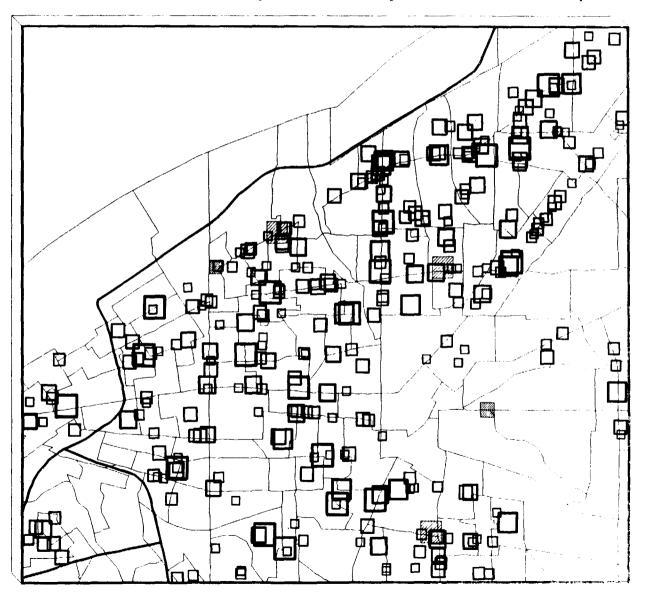


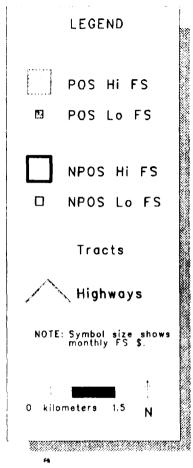


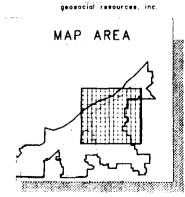


POS and Non-POS FSP Retailers

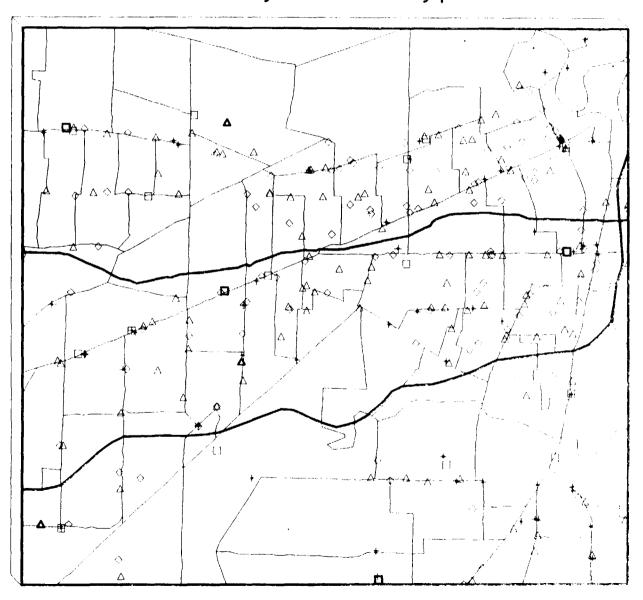
NE Cleveland, by Monthly FS Redemptions







### POS and Non-POS FSP Retailers SW Cleveland, by Store Type



LEGEND

#### POS Stores

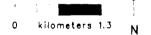
- Supermarket
- Grocery
- Convenience
- Other Store

#### Non-POS Stores

- Supermarket
  - Grocery
- Convenience
- Other Store

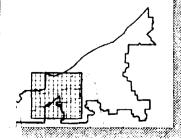
#### Tracts



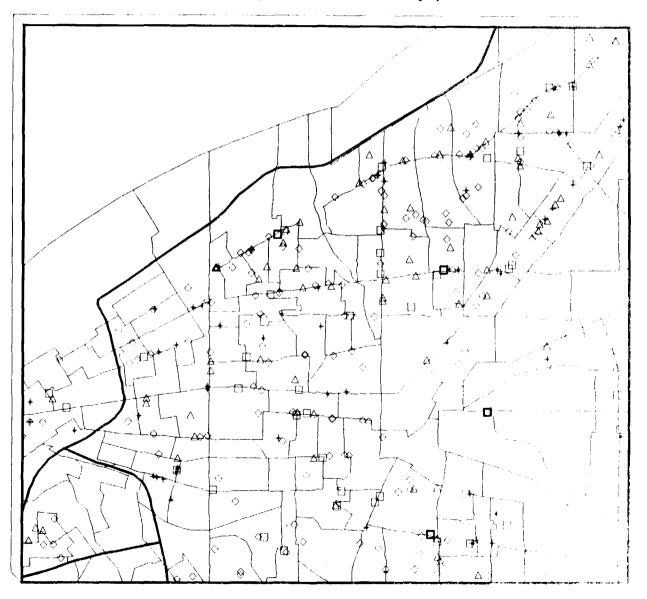


geosocial resources, inc.

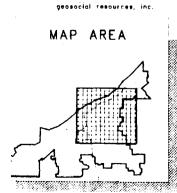




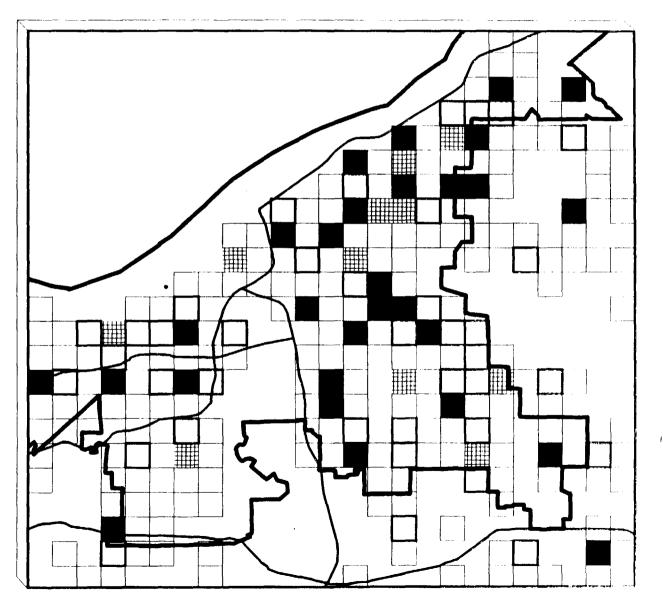
# POS and Non-POS FSP Retailers NE Cleveland, by Store Type



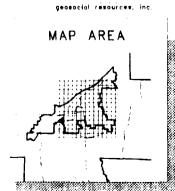
#### LEGEND POS Stores Supermarket Grocery Convenience Other Store Non-POS Stores Supermarket Grocery Convenience Other Store Tracts 🥕 . Highways kilometers 1.5



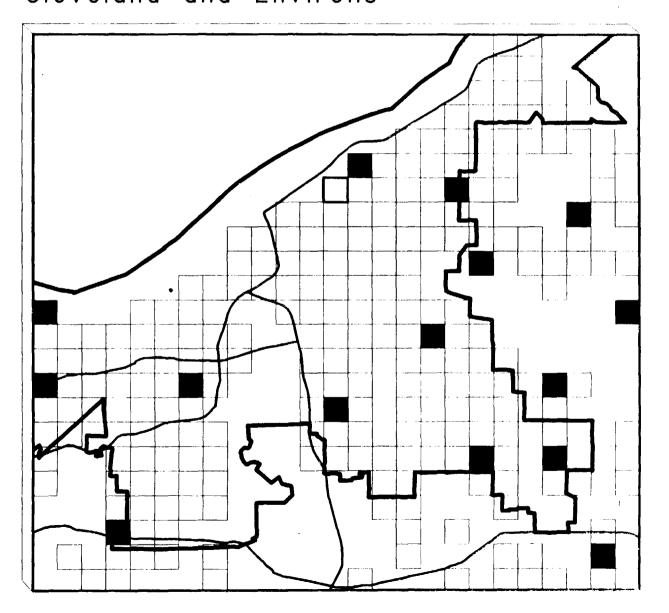
#### Percentage of County FS \$: Cleveland and Environs

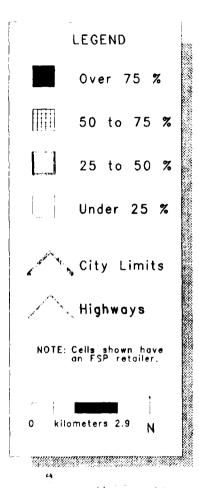


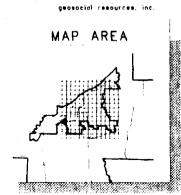
LEGEND 1% or More .5% - 1% .2% - .5% Under .2% City Limits 🦯 📐 Highways NOTE: Cells shown have an FSP retailer. kilometers 2.9



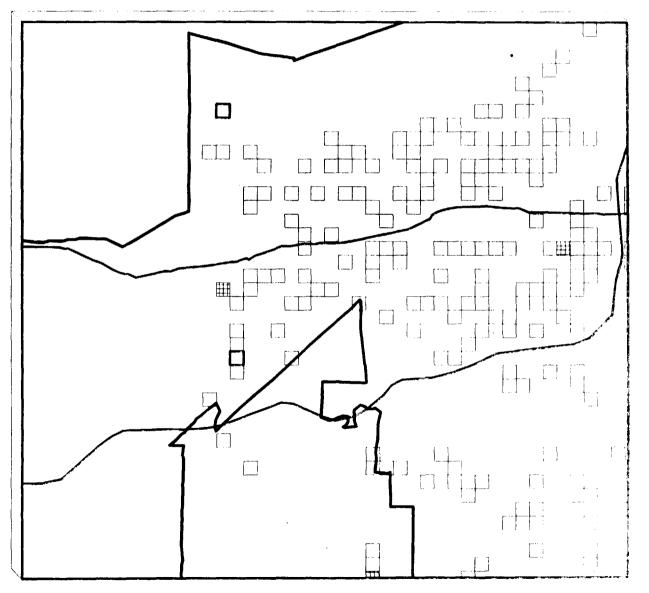
#### POS FS \$ as % Total FS \$: Cleveland and Environs

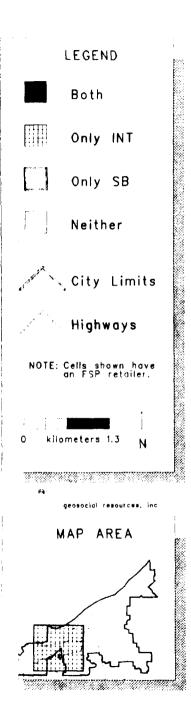




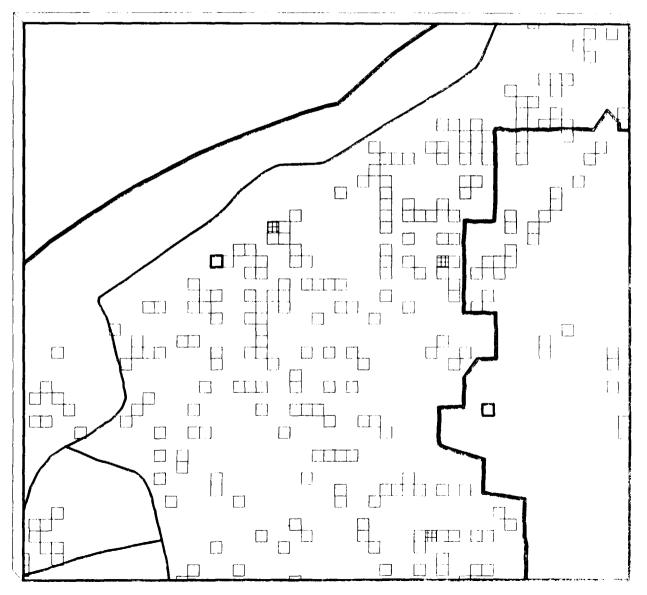


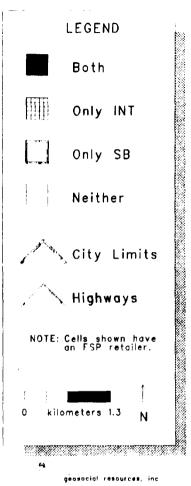
# Integrated and Stand-Beside POS: SW Cleveland and Environs

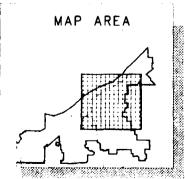




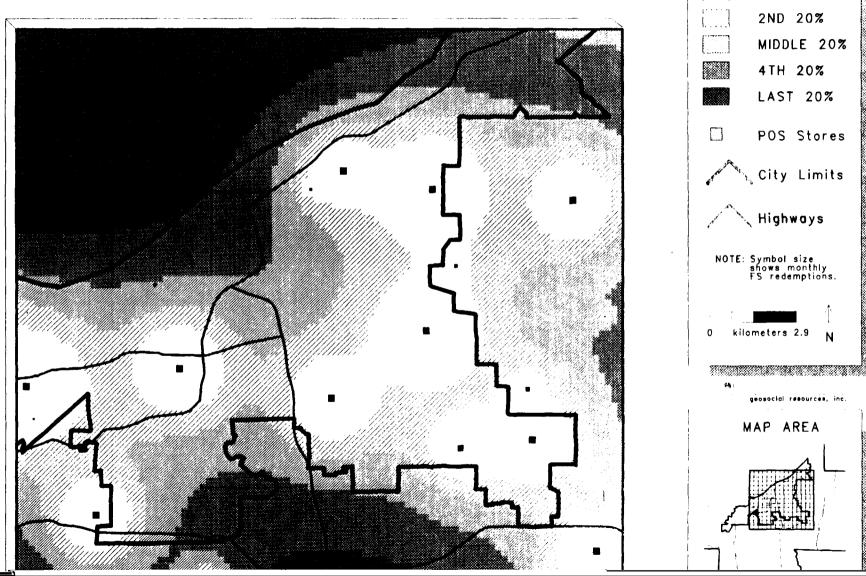
Integrated and Stand-Beside POS: NE Cleveland and Environs







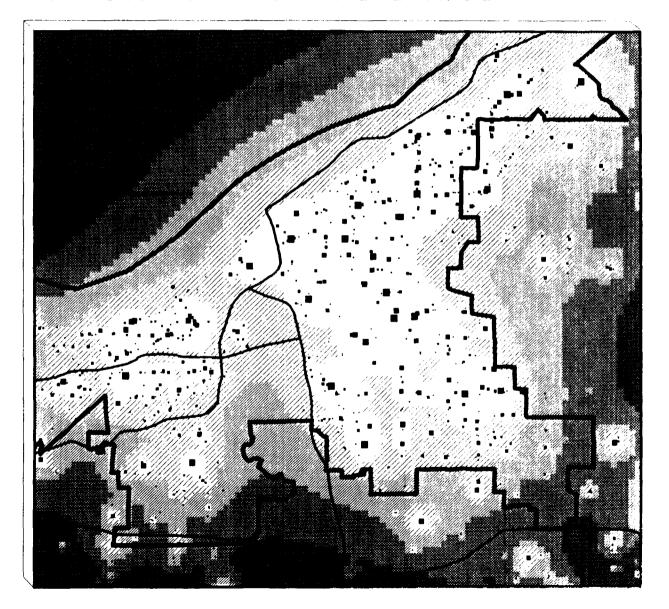
### POS Availability Surface Model: FSP Stores in Cleveland Area

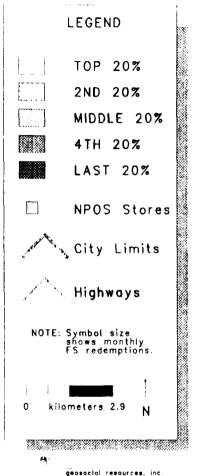


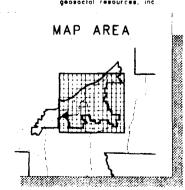
LEGEND

TOP 20%

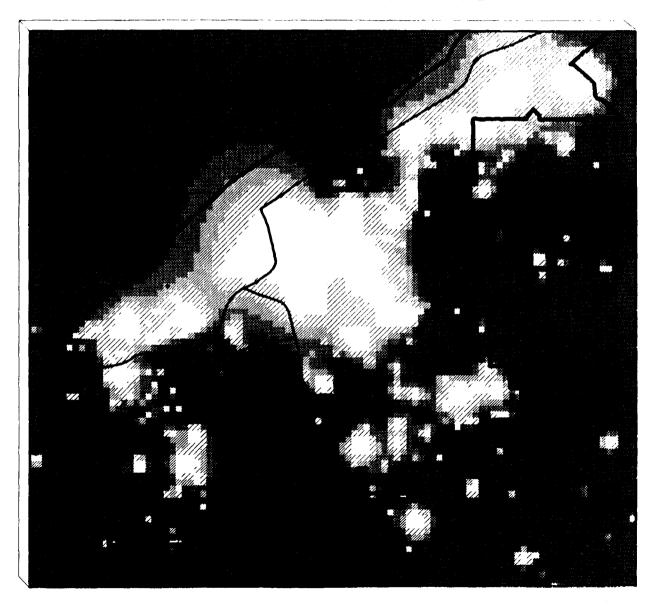
## NPOS Availability Surface Model: FSP Stores in Cleveland Area

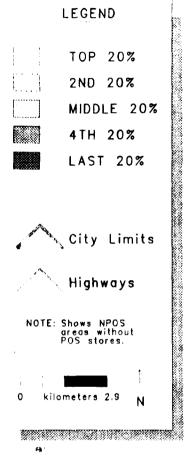


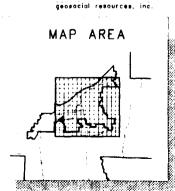




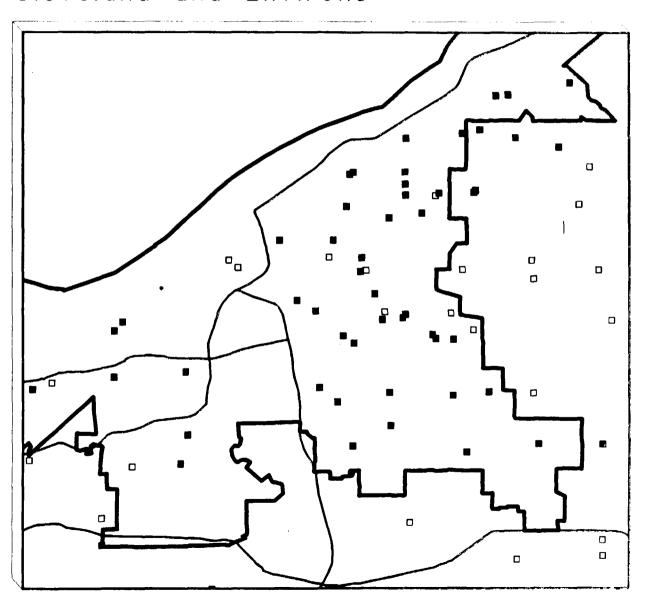
## Model of NPOS without POS: FSP Stores in Cleveland Area

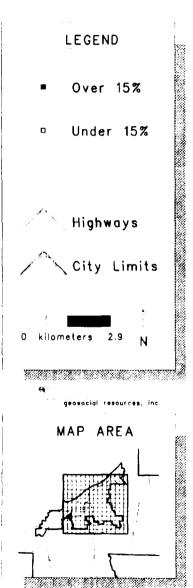




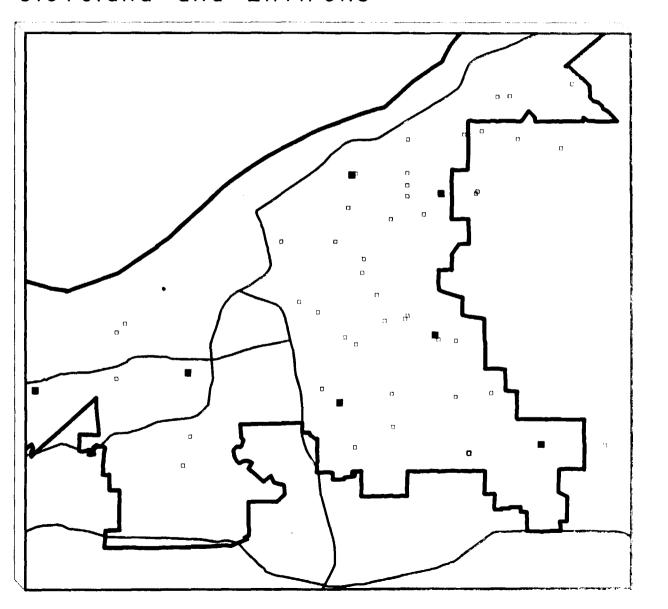


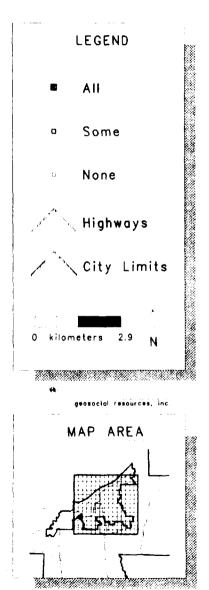
# Supermarkets: FS as % of Food Sales Cleveland and Environs





POS Lanes in Supermarkets with 15% on FS Cleveland and Environs





# Micro Focus Cook and Will Counties

Cook and Will Counties in Illinois make up the South Chicago study area. The only major food retailer accepting debit cards for purchases is Jewel, which has 101 stores on-line in the area. Figure D.5 shows the number of food stamp authorized retailers in the overall study area and how these retailers are distributed between the two counties.

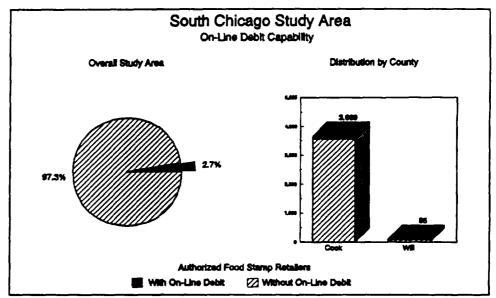


Figure D.5

Each Jewel store has Concord Linx 1075 MSR/PIN pads in a stand beside configuration. These terminals are connected to an in-store "communication control module" which routes transactions by means of a leased line? to Concord/EFS. Concord switches transactions to either Cash Station or EFT Illinois. This scenario is identical to that found in ACME supermarkets in New Castle County, Delaware and Essex County, New Jersey. The sole difference is that Concord switches ACME transactions to MAC, NYCE, or MOST.

<sup>&</sup>lt;sup>7</sup> Jewel has developed a satellite communication system which will eventually be used for sending transactions from the store level to Concord/EFS.

Other large food stamp authorized retailers in the area, including Eagle Foods, Dominick's Finer Foods, and White Hen, have plans for on-line debit systems.

- A spokesman for Eagle Foods said that the company has recently begun accepting credit cards. As a result, the hardware is in place for on-line debit. He did not give specifics as to when debit cards would be accepted at Eagle stores.
- Dominick's currently has an IBM 4683 cash register system and plans to integrate VeriFone Omni 490 terminals with the ECRs. This system, with minor software modifications, could support on-line debit and EBT. The contact at the company did not give a timetable for the terminal deployments and on-line debit acceptance.
- White Hen Pantry has plans for a credit/debit/check verification system in the near future. A company official could not give specifics.

Several other large retailers in the study area have no plans for on-line debit systems. They include Aldi Foods, Butera, Cub Foods, and Walgreen's.

# EBT Readiness in Cook and Will Counties

In the South Chicago study area of Cook and Will Counties, 101 of 3,764, or 2.7 percent, of food stamp authorized retailers accept debit cards for purchases. These 101 retailers account for 13.1 percent of the food stamp redemptions in the study area. Figure D.6 compares these two numbers.

By these measures, the study area is one of the least EBT ready of the twelve study areas. If Eagle, Dominick's, and White Hen Pantry follow through with plans to deploy terminals for on-line debit, this number will increase to 7.4 percent. Figure D.7 illustrates the breakdown between debit-equipped and non-debit equipped retailers if these stores were to come on-line.

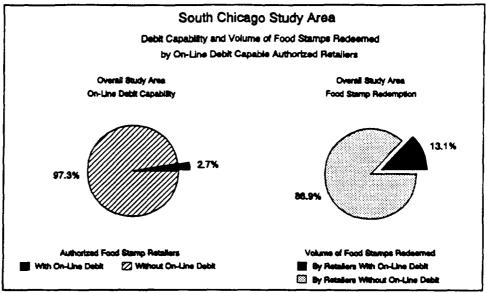


Figure D.6

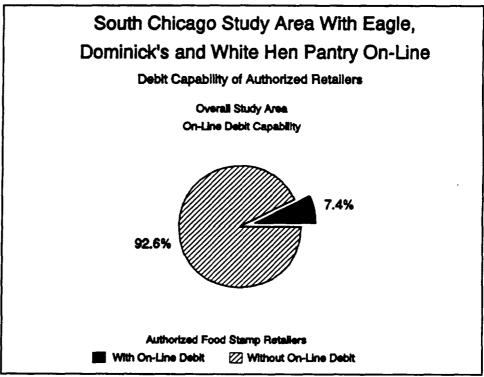


Figure D.7

Table D.3 is a matrix illustrating the <u>current</u> breakdown of retailers in the study area by level of terminal deployment and volume of food stamp redemption.

Table D.3

Retailer Type	Level of Deployment <sup>1</sup>			
	Full	Part	None	Total
Α	14	0	2119	2133
В	86	1	252	339
С	0	0	1292	1292
Total	100	1	3663	3674

#### Legend A:

Avg. Monthly FS sales > 15% total food sales ⇒ all lanes must be deployed. All retailer types.

Note that all but one of the stores currently accepting debit cards for purchases has the required level of terminal deployment. Also, 2,119 of 3,764, or 56.3 percent, of all retailers without on-line debit will require full deployment of terminals in their stores.

#### Maps

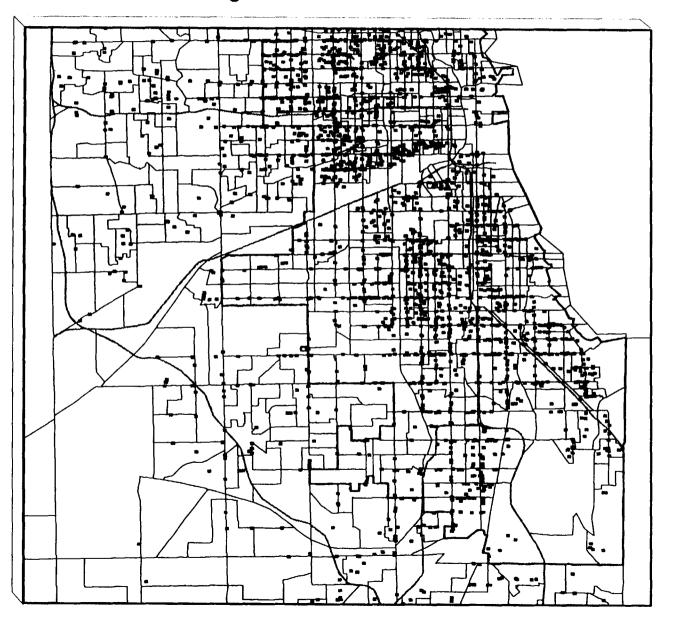
Immediately following this page are presented the four color and fifteen monochromatic maps for this study area. The content and views depicted are described generically in the introduction to Technical Report #2.

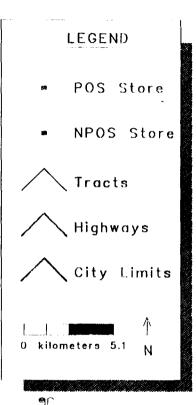
<sup>8:</sup> Supermarkets: Avg. monthly FS sales < 15% total food sales ⇒ one terminal for each \$11,000 in monthly FS volume up to # of lanes in store.</p>

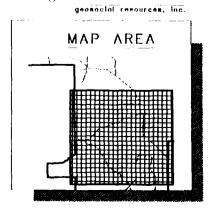
C: All others: Avg. monthly FS sales < 15% total food sales = one terminal for each \$8,000 in monthly FS volume up to # of lanes in store.

<sup>&</sup>lt;sup>1</sup> Retailers fully, partially, or not at all meeting the regulatory requirement for terminal deployment as set forth in 7 CFR \$274.12(g)(4)(ii).

POS, Non-POS Retailers in FS Program: South Chicago and Environs

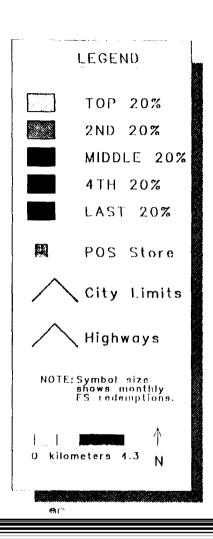






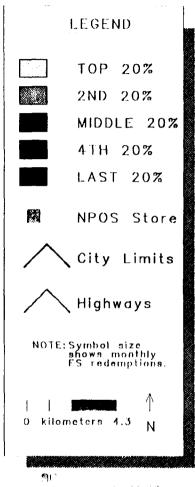
## POS Availability Model: FSP Stores in South Chicago Area

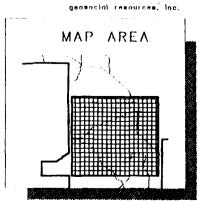




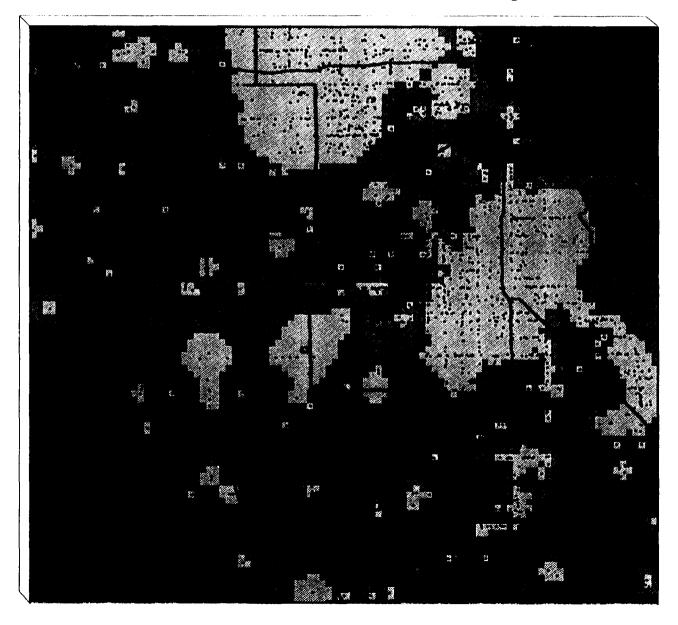
## NPOS Availability Model: FSP Stores in South Chicago Area

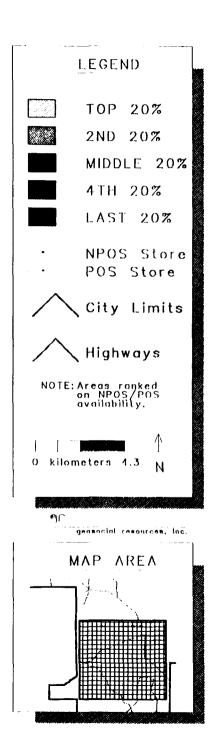




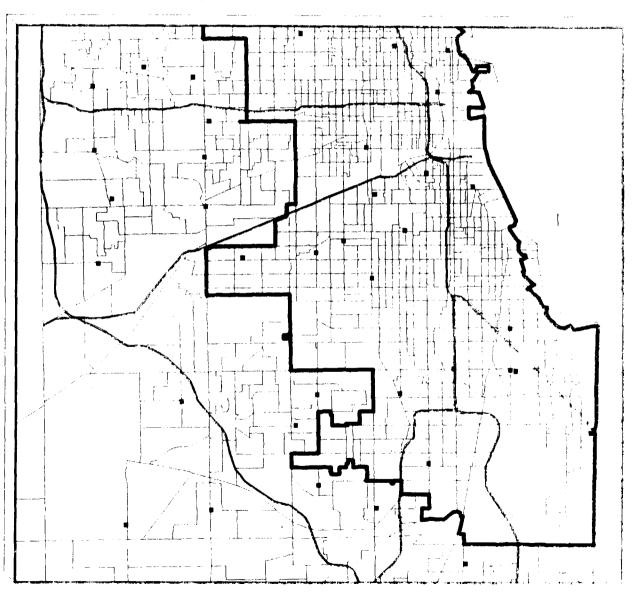


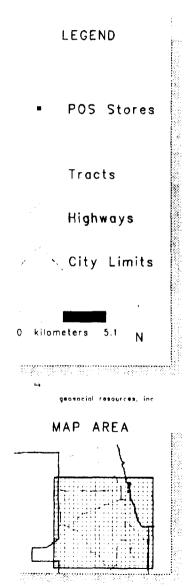
# Model of NPOS without POS: FSP Stores in South Chicago Area



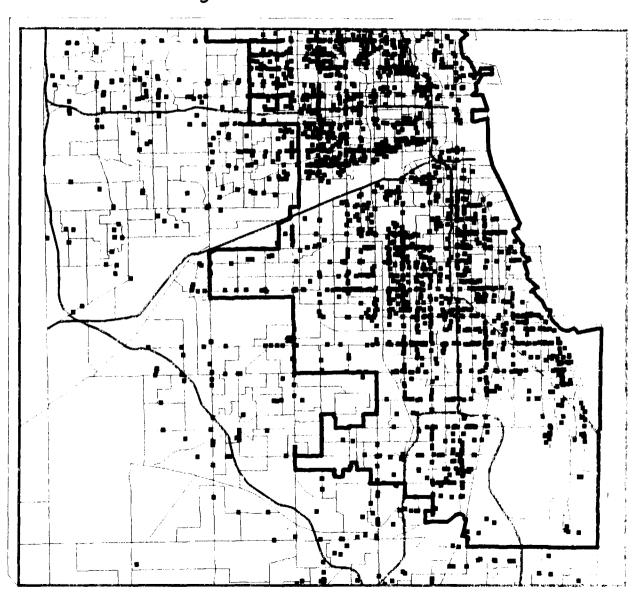


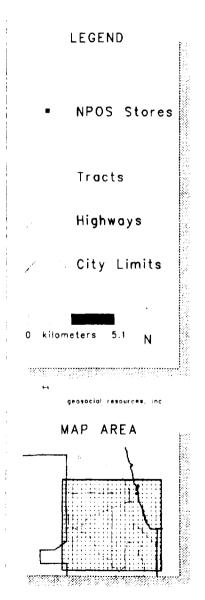
## POS-Equipped Retailers in FS Program: South Chicago and Environs



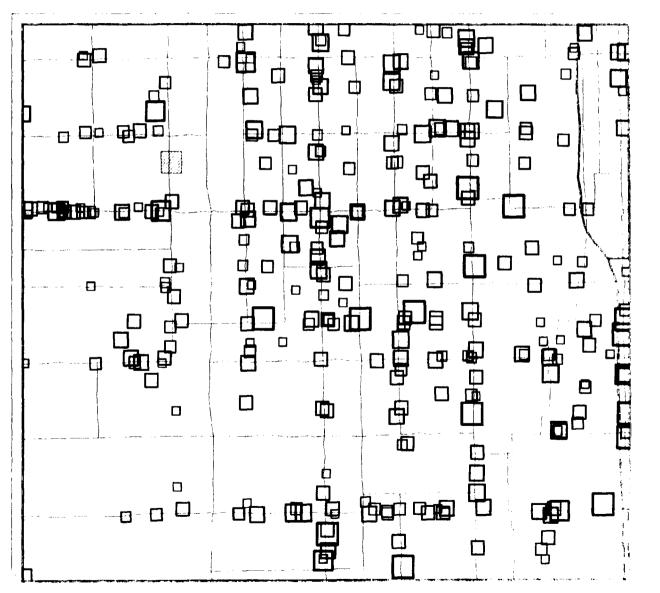


### Non-POS-Equipped Retailers in FS Program: South Chicago and Environs



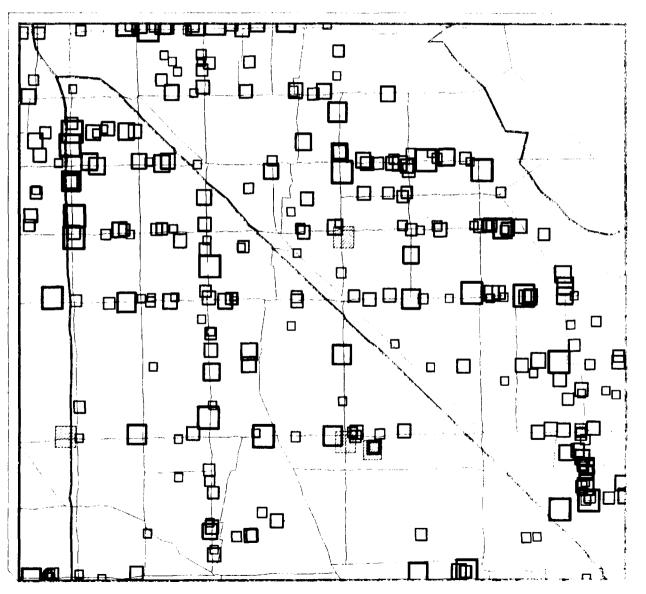


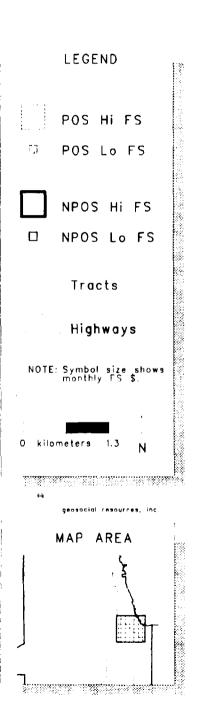
POS and Non-POS FSP Retailers SW Chicago, by Monthly FS Redemptions



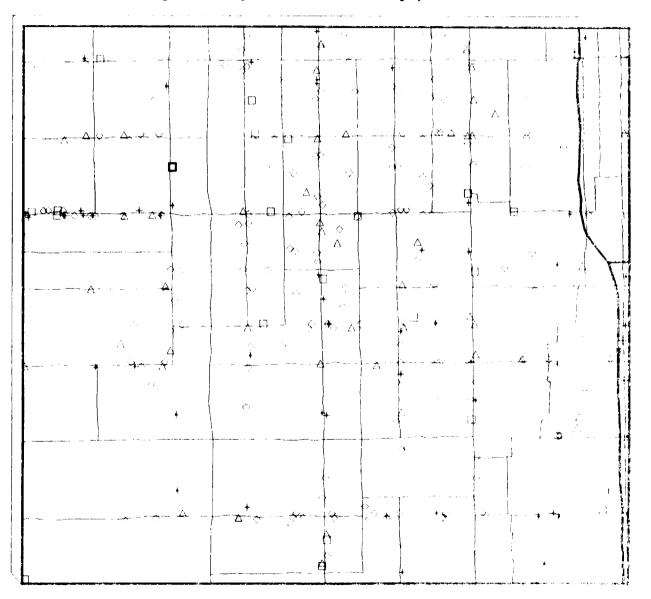
LEGEND POS Hi FS POS Lo FS NPOS Hi FS NPOS Lo FS Tracts Highways NOTE: Symbol size shows monthly FS \$. 0 kilometers 0.9 geosocial resources, inc. MAP AREA

POS and Non-POS FSP Retailers SE Chicago, by Monthly FS Redemptions



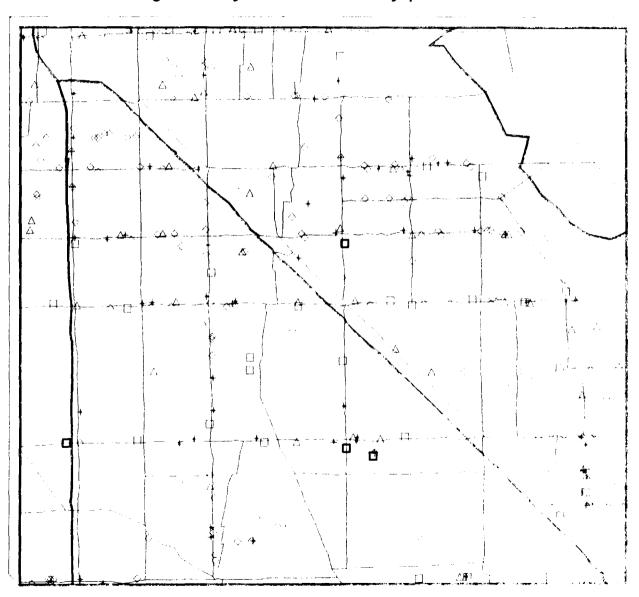


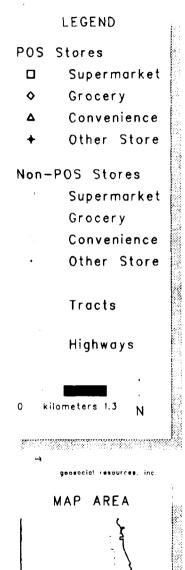
# POS and Non-POS FSP Retailers SW Chicago, by Store Type



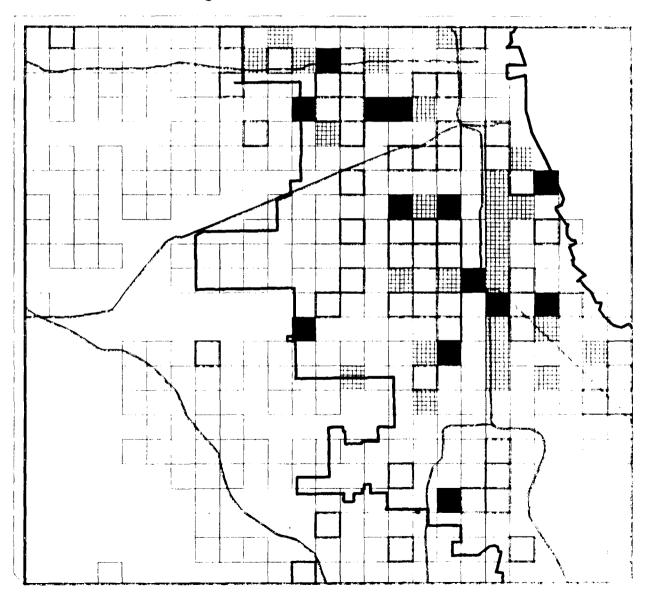
#### LEGEND POS Stores Supermarket Grocery Convenience Other Store Non-POS Stores Supermarket Grocery Convenience Other Store Tracts Highways kilometers 0.9 MAP AREA

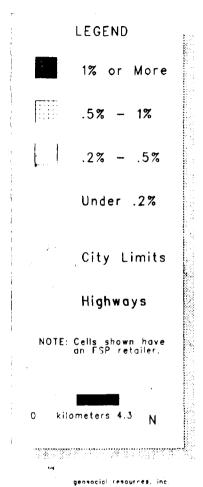
# POS and Non-POS FSP Retailers SE Chicago, by Store Type

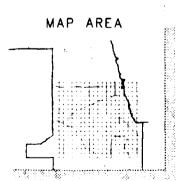




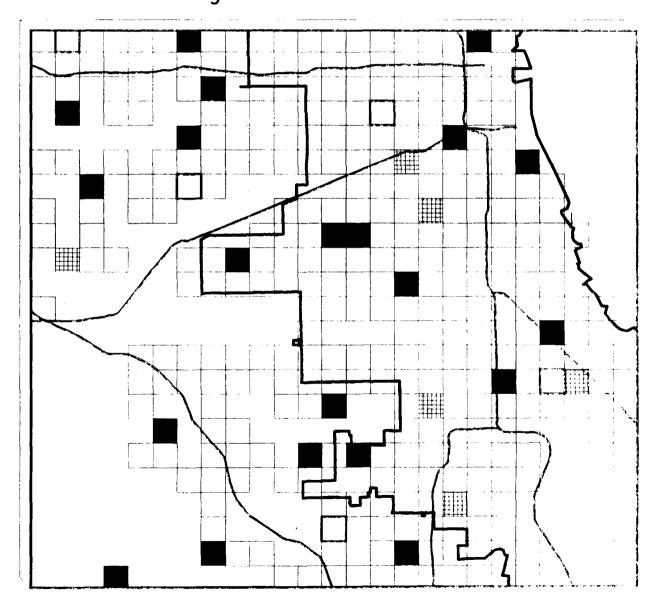
### Percentage of County FS \$: South Chicago and Environs

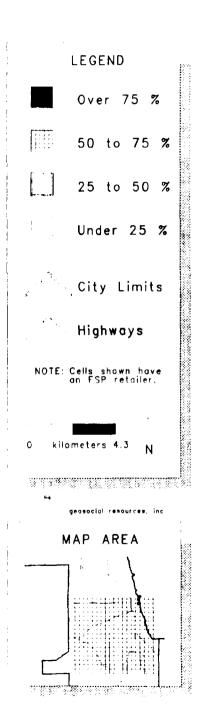






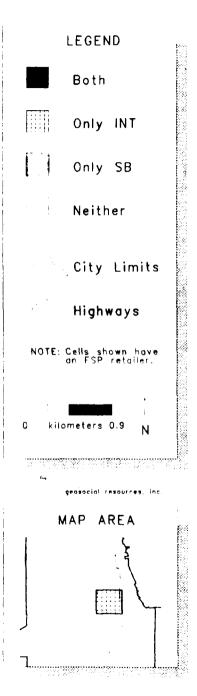
## POS FS \$ as % Total FS \$: South Chicago and Environs



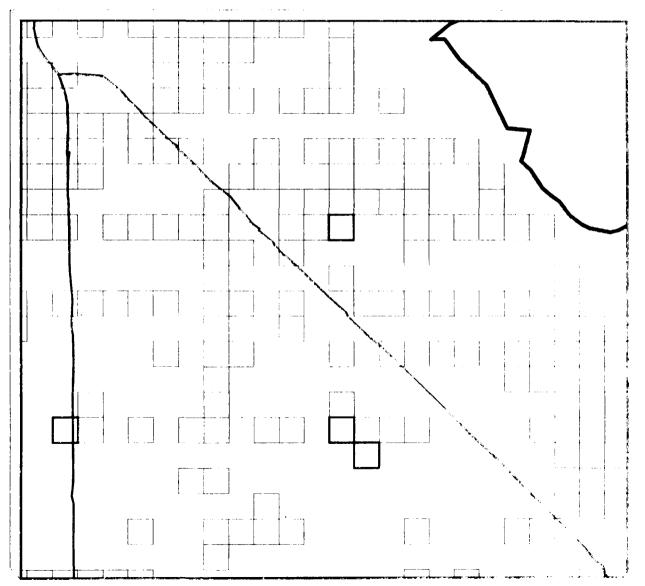


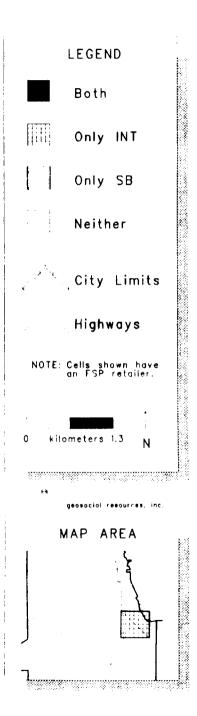
# Integrated and Stand-Beside POS: SW Chicago and Environs



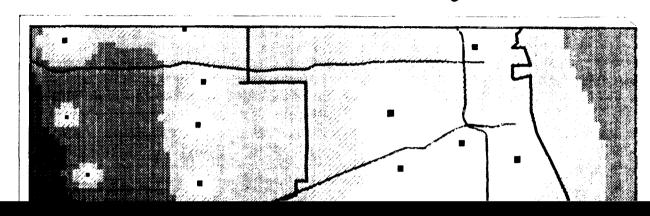


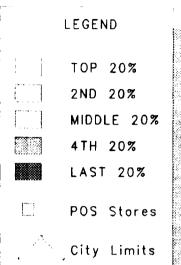
Integrated and Stand-Beside POS: SE Chicago and Environs



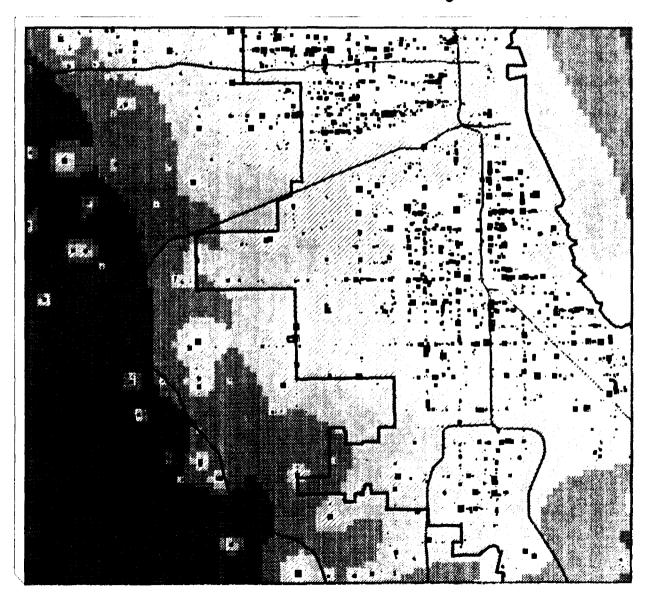


# POS Availability Surface Model: FSP Stores in South Chicago Area

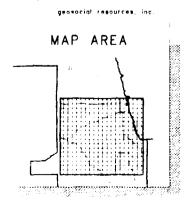




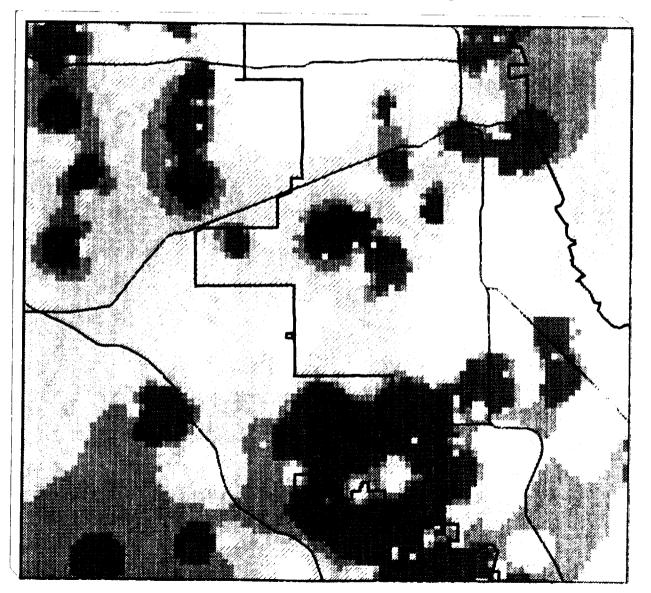
# NPOS Availability Surface Model: FSP Stores in South Chicago Area



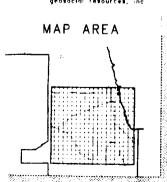
LEGEND TOP 20% 2ND 20% MIDDLE 20% 4TH 20% LAST 20% NPOS Stores 📏 City Limits Highways NOTE: Symbol size shows monthly FS redemptions. kilometers 4.3 N



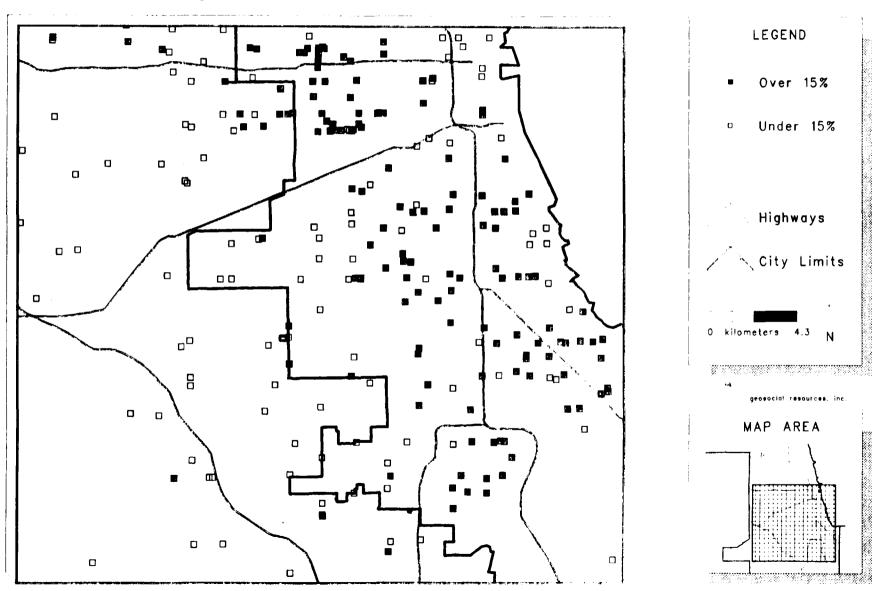
# Model of NPOS without POS: FSP Stores in South Chicago Area



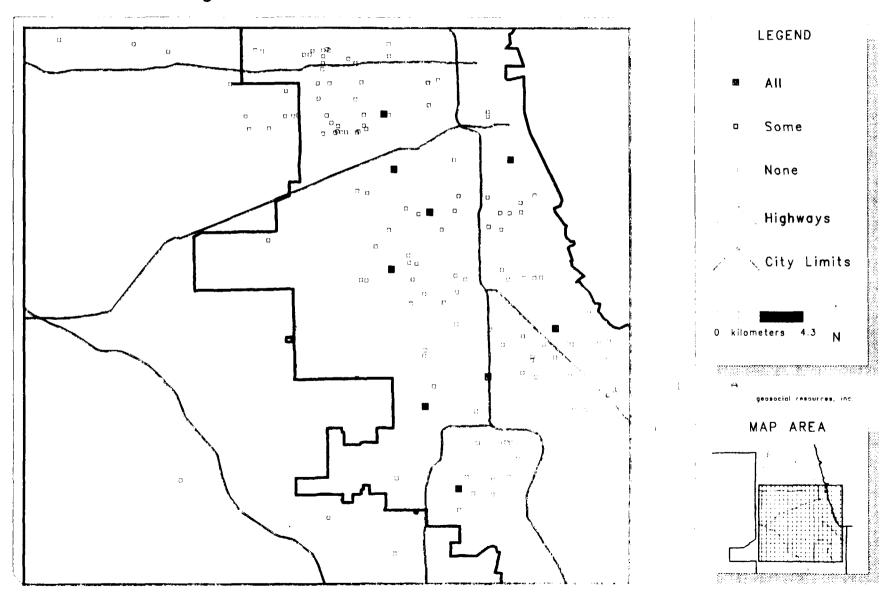
LEGEND TOP 20% 2ND 20% MIDDLE 20% 4TH 20% LAST 20% City Limits Highways NOTE: Shows NPOS areas without POS stores. 0 kilometers 4.3 N geosocial resources, inc MAP AREA



# Supermarkets: FS as % of Food Sales South Chicago Area



POS Lanes in Supermarkets with 15% on FS South Chicago Area



#### E. MOUNTAIN PLAINS REGION

The FNS Mountain Plains region consists of ten states: Montana, North Dakota, Wyoming, South Dakota, Nebraska, Kansas, Colorado, Utah, Iowa, and Missouri. Two of the FNS study areas are located in the Mountain Plains Region: Des Moines, Iowa and St. Louis, Missouri. In the Des Moines study area, the only EFT processor (by state regulations) is the Iowa Transfer System, or ITS, which operates



Shazam network. In the St. Louis study area, BankMate is the dominant network.

#### Research Methodology

The method of data collection for Des Moines and St. Louis mirrored that of several of the previously discussed study areas. This research effort proceeded as follows:

- the regional network (Shazam or BankMate) was contacted for a list of retailers in the study area accepting debit cards for purchases;
- this list was compared to the database from FNS containing all food stamp authorized retailers in the study area. The result was comprehensive lists for both study areas of all food stamp authorized retailers accepting debit cards for purchases; and
- retailers on this list were contacted and questioned about their service models.

Occasionally a network, bank, or third party processor was contacted for answers to questions about on-line debit in the study area. For instance, the Shazam network was able to provide information about terminal deployments in Fareway stores that Fareway was not able to supply.

#### Micro Focus Des Moines Area

The Des Moines study area consists of Polk county, which includes the City of Des Moines, and Story county, which contains the City of Ames. The major EFT network in the area, Shazam, which in 1981 became one of the first EFT networks to offer on-line debit. The on-line debit side of Shazam is unique in that retailers usually link directly to the network, thus avoiding intermediate processors. The network itself operates on a forprofit basis, but rather than distributing earnings to shareholders or member institutions, most profits are invested in research and development. Switch fees consist of \$0.05 paid by the card issuer to Shazam. The network will soon institute an interchange fee of \$0.10 paid to the acquiring bank by the card issuing bank.

Major retailers in the Des Moines area accepting debit cards for purchases include Hy-Vee, Fareway, and Dahl's supermarkets, as well as some independently-owned Casey's General Stores. Of the 202 food stamp authorized retailers in the study area, 37 have on-line debit. Figure E.1 shows this number as a percentage of all authorized retailers and how these retailers are distributed between the two counties.

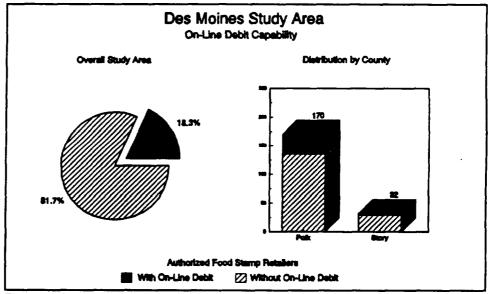


Figure E.1 (data as of October 1993)

The three largest supermarket chains in the study area, Dahl's, Hy-Vee and Fareway, are equipped for on-line debit. Non-debit equipped chains operating in the area include Aldi Foods, Food 4 Less, and Food Saver. The majority of non-equipped retailers are convenience stores and small "mom and pop" markets. Of the 165 food stamp authorized retailers without on-line debit services, 152 had four registers or fewer, and 143 had two or fewer.

Multi-lane supermarkets and convenience store chains with no on-line debit were contacted for their plans for accepting debit cards for purchases.

- Aldi foods is a no-frills warehouse operation and has no plans for on-line debit.
- Casey's General Stores are small convenience stores located primarily in non-urban locations. Seventeen of the twenty-one stores in the study area are owned and operated by the company, Casey's General Stores, Inc. The remaining four are franchise operations. The company stores do not accept debit cards for purchases but the independently-owned stores are all on-line using stand beside VeriFone Tranz 330 dial-up terminals. A spokesman for the company says that Casey's has looked into on-line debit, but does not anticipate that debit cards will be deployed in the near future.
- Git-N-Go operates 11 convenience stores in the Des Moines study area. An official at the company said that the stores currently have VeriFone Tranz 330 terminals that are used to initiate credit card transactions but not debit. According to the contact, the company is eager to accept debit cards but operational and business issues are holding it back.
- Holiday Foods operates one Food 4 Less store in the Des Moines study area. This store uses IBM 4683 ECRs in a controller-based configuration. An official at Holiday said that the company is looking into debit and should have the store on-line within the next two years.
- Food Saver has three locations in the Des Moines area.
   They considered a frequent shopper/debit/credit system

recently but found start-up costs to be prohibitive. They have no future plans for on-line debit.

- Kwik Shop, a convenience store chain with 16 locations in the study area, recently began accepting credit cards using terminals provided by Phillips Petroleum. They have no immediate plans to accept debit cards.
- The Quik Trip Corporation operates 29 convenience stores in the Des Moines study area. The stores accept credit cards using Hypercom terminals but currently do not accept debit cards nor have plans to do so.

#### Common Service Models Encountered

As was mentioned at the beginning of this section, the Shazam network is unique in that it allows retailers to link directly to its switch from the store level. This scenario, corresponding to common service model option 1, is used by all major retailers in the Des Moines area and was not found in any of the other eleven study areas.

Dahl's Foods operates 10 stores in the Des Moines study area, all of which accept debit cards for purchases. The stores have NCR 1255 ECR systems with integrated NCR 4430 MSR/PIN pads. Transactions are sent by way of a LAN to a back room processor and relayed directly to Shazam. The Dahl's system is diagrammed in Figure E.2.

Hy-Vee Food Stores, Inc. operates 14 full-service supermarkets in the study area as well as the Save-U-More Food Store in Ames. The service model used by Hy-Vee is similar to that of Dahl's. Electronic payment systems consist of NCR 4430 MSR/PIN pads integrated to controller-based NCR 1255, 2126, or 2127 ECRs. Transactions are sent directly to Shazam.

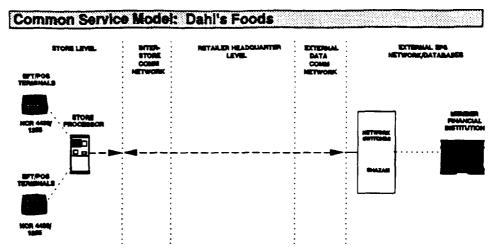


Figure E.2

The four Fareway stores in the Des Moines study area went online to accept debit cards in late summer 1993. The stores have VeriFone Tranz 330 stand beside terminals in all lanes. Each checkstand has a modem which is used to send the transaction directly to Shazam. Figure E.3 diagrams this scenario.

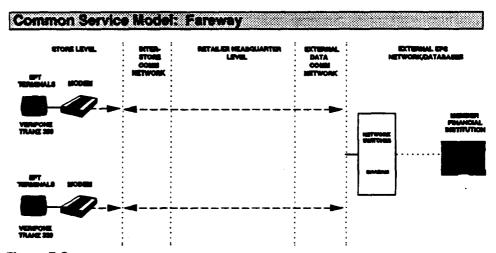


Figure E.3

#### EBT Readiness in the Des Moines Study Area

As shown in Figure E.1, 37 of 202, or 18.3 percent of the food retailers in the Des Moines study area are equipped to accept debit cards for purchases. This number places Des Moines second only to the Houston, Texas study area in percentage of food stamp authorized retailers with on-line debit. These retailers account for over 50 percent of the food stamp redemptions in the study area. Figure E.4 compares these two statistics.

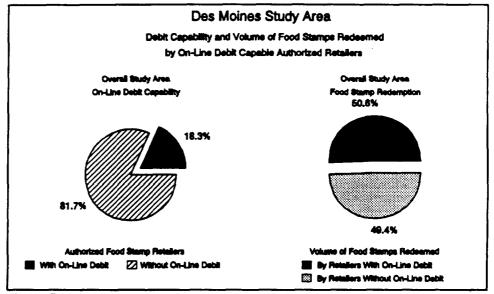


Figure E.4

Table E.1 distributes the food stamp authorized retailers in the study area into nine categories, based on volume of food stamp redemption and level of terminal deployment.

Table E.1

Retailer Type	Level of Deployment <sup>1</sup>			
	Full	Part	None	Total
Α	3	0	20	23
В	29	0	13	42
С	5	0	132	137
Total	37	0	165	202

Legend A:

Avg. Monthly FS sales > 15% total food sales = all lanes must be deployed. All retailer types.

Table E.1 indicates that all retailers in the study area with food stamp authorization and on-line debit meet terminal deployment requirements. In addition, only 20 of the 165 retailers without online debit are required to have all lanes deployed with terminals.

#### Maps

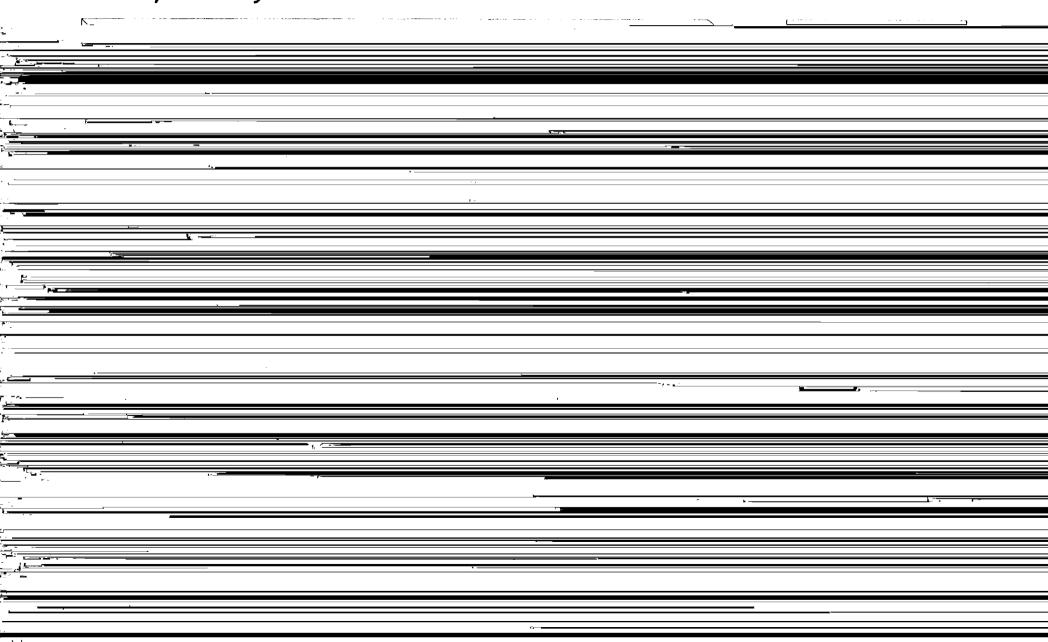
Immediately following this page are presented four color and fifteen monochromatic maps for this study area. The content and views depicted are described generically in the introduction to Technical Report #2.

B: Supermarkets: Avg. monthly FS sales < 15% total food sales ⇒ one terminal for each \$11,000 in monthly FS volume up to # of lenes in store.

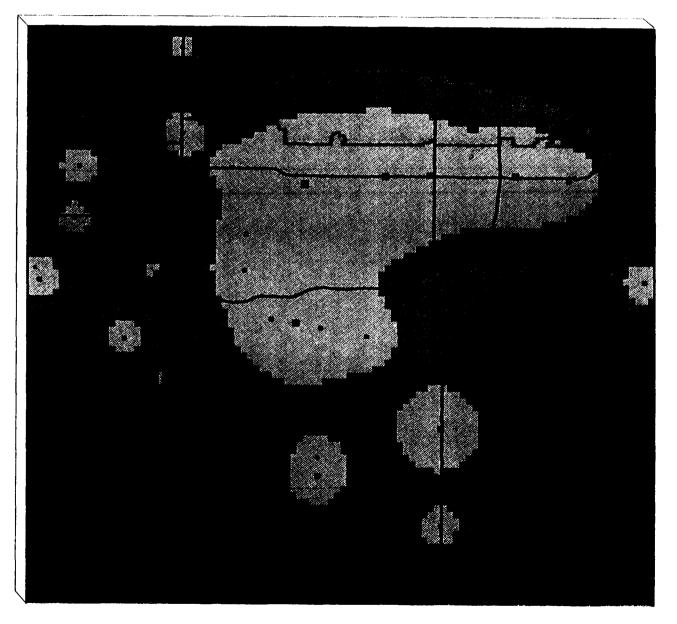
C: All others: Avg. monthly FS sales < 15% total food sales ⇒ one terminal for each \$8,000 in monthly FS volume up to # of lanes in store.

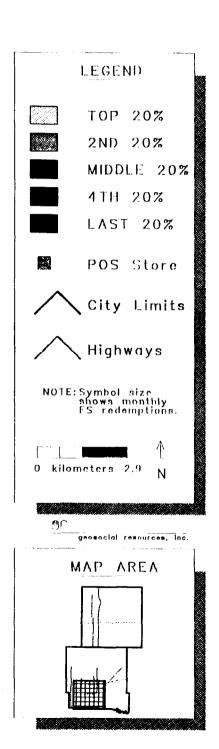
<sup>&</sup>lt;sup>1</sup> Retailers fully, partially, or not at all meeting the regulatory requirement for terminal deployment as set forth in 7 CFR §274.12(g)(4)(ii).

POS, Non-POS Retailers in FS Program: Polk/Story Counties



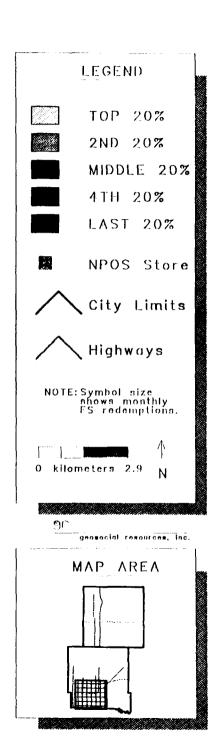
## POS Availability Model: FSP Stores in DesMoines & Environs



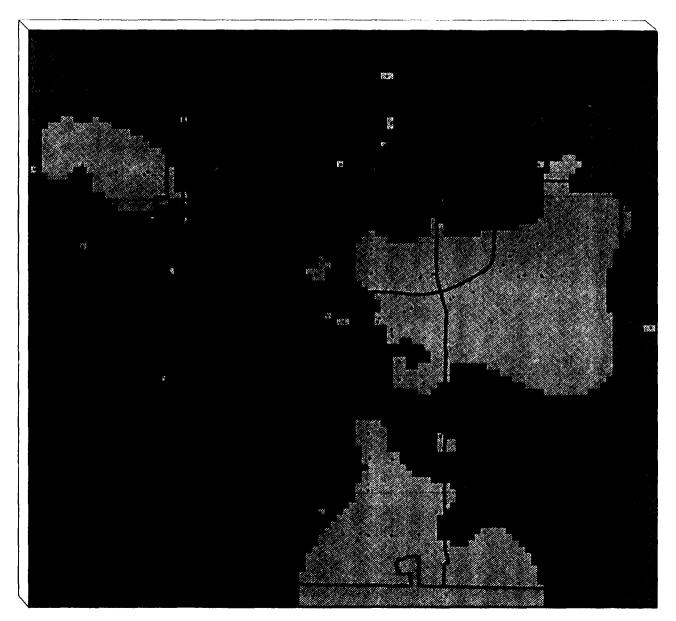


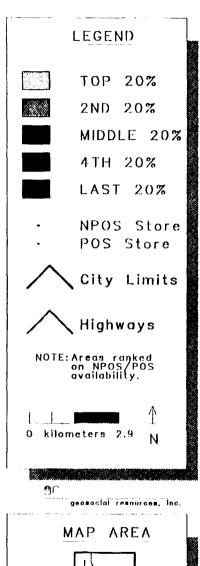
### NPOS Availability Model: FSP Stores in DesMoines & Environs

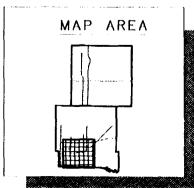




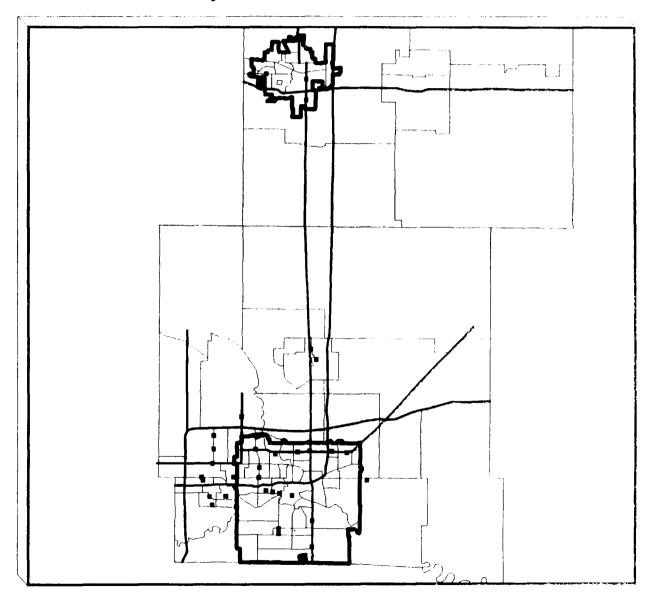
# Model of NPOS without POS: FSP Stores in DesMoines & Environs

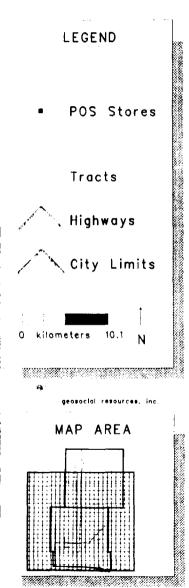




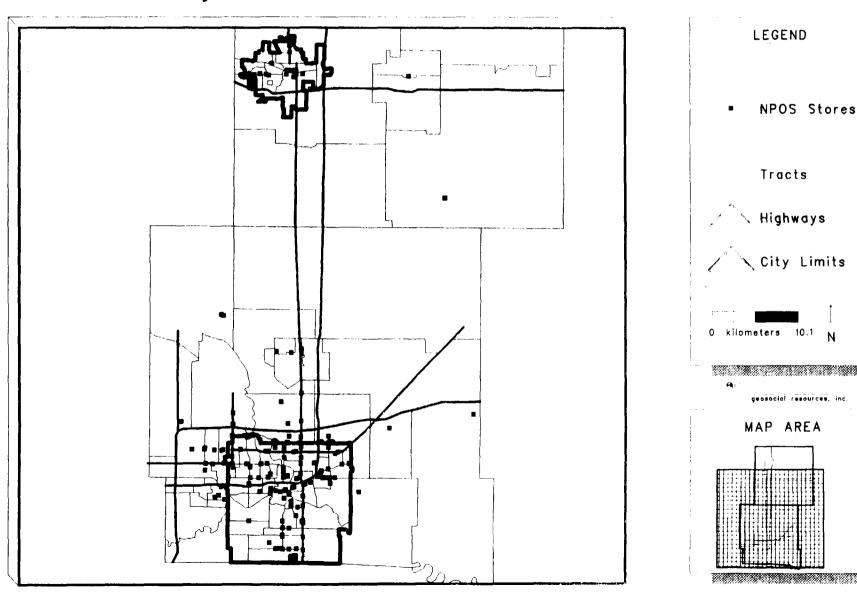


## POS-Equipped Retailers in FS Program: Polk & Story Counties

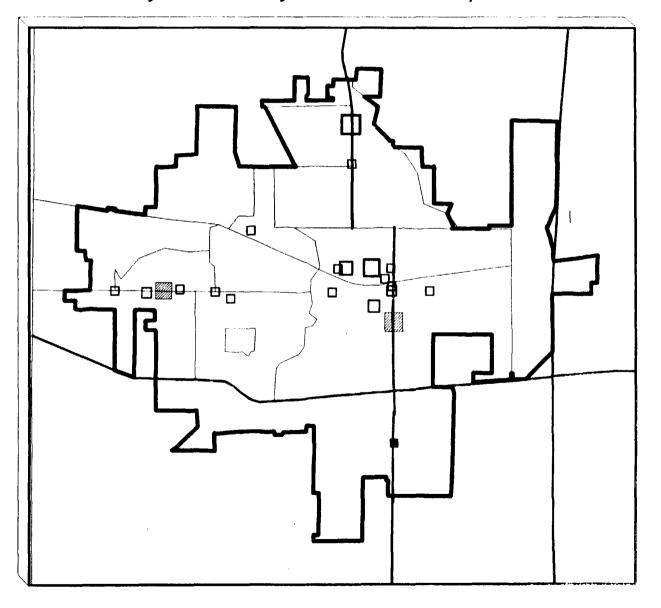


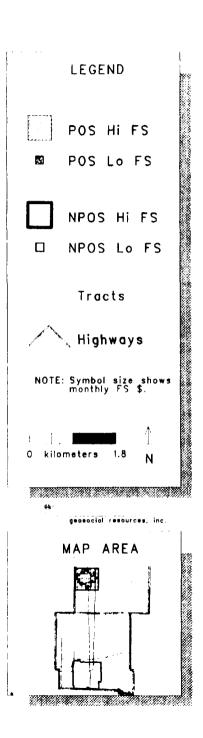


### Non-POS-Equipped Retailers in FS Program: Polk & Story Counties

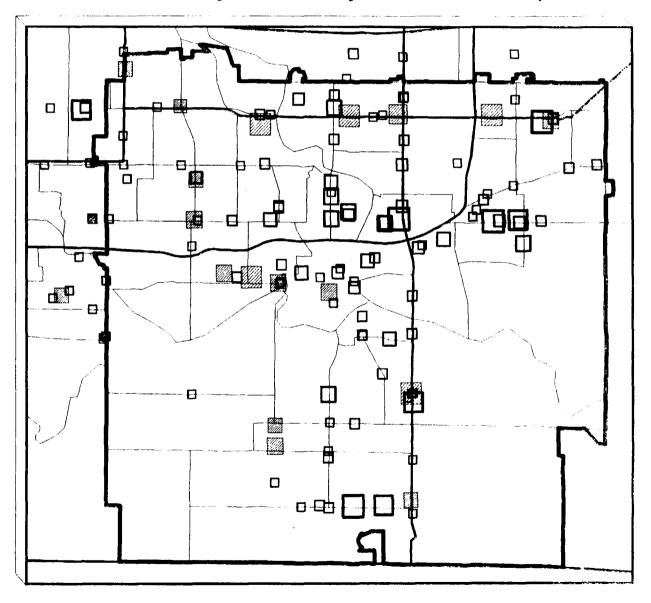


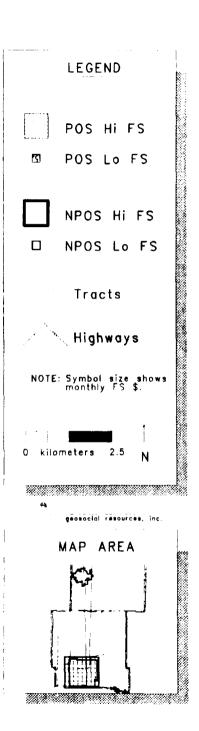
## POS and Non-POS FSP Retailers Ames, by Monthly FS Redemptions



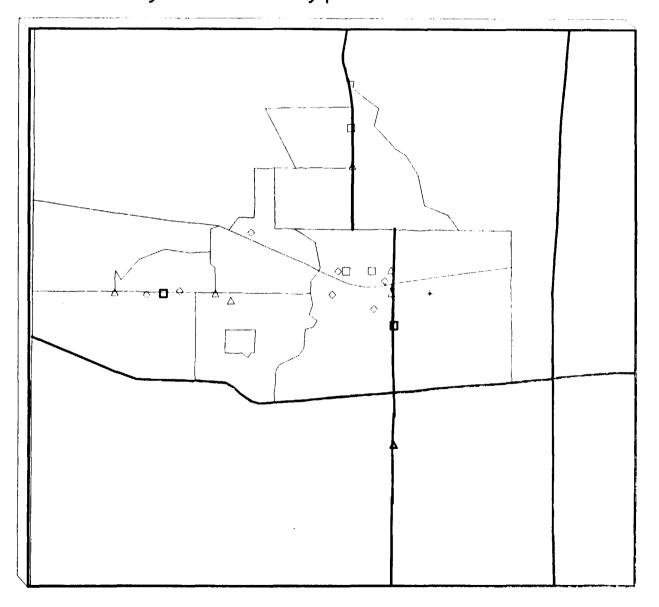


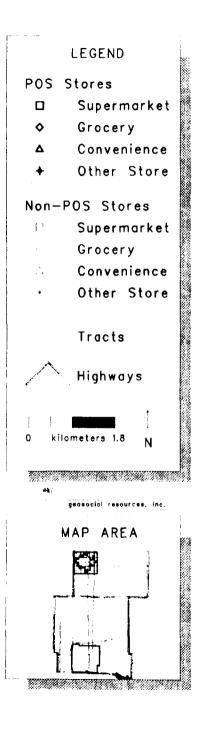
## POS and Non-POS FSP Retailers DesMoines, by Monthly FS Redemptions



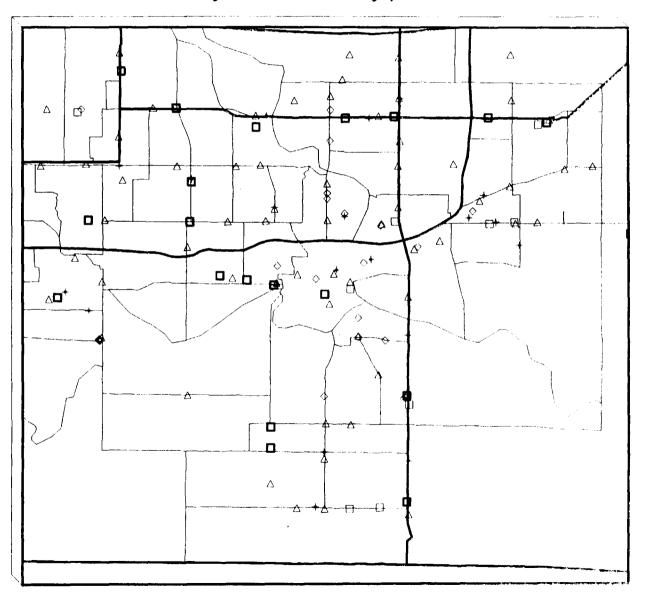


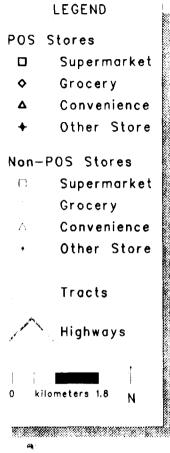
## POS and Non-POS FSP Retailers Ames, by Store Type

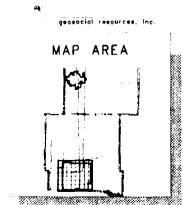




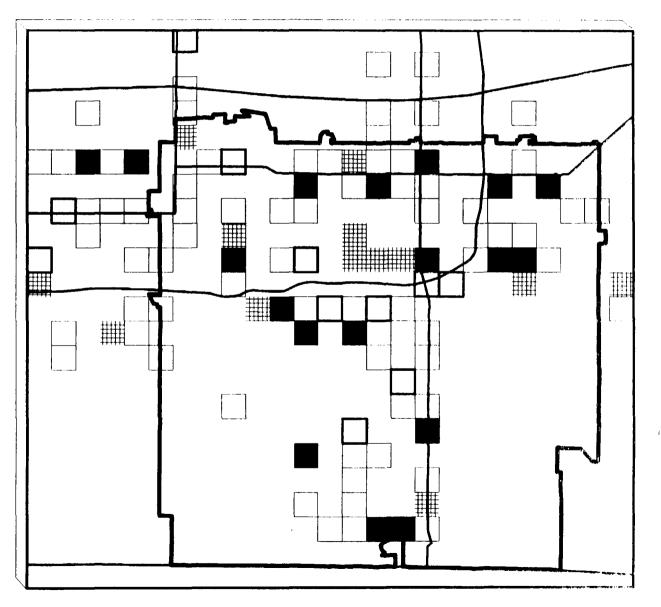
## POS and Non-POS FSP Retailers DesMoines, by Store Type

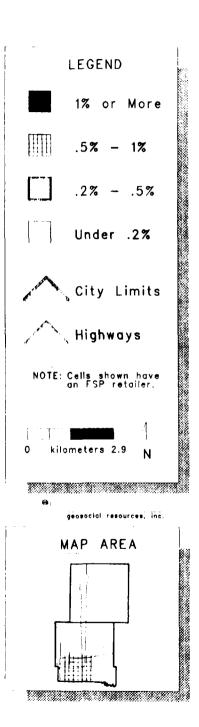






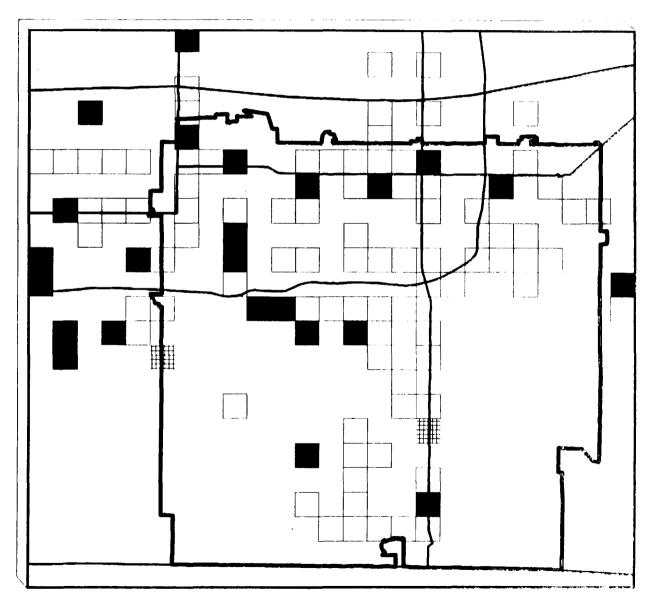
#### Percentage of County FS \$: DesMoines and Environs

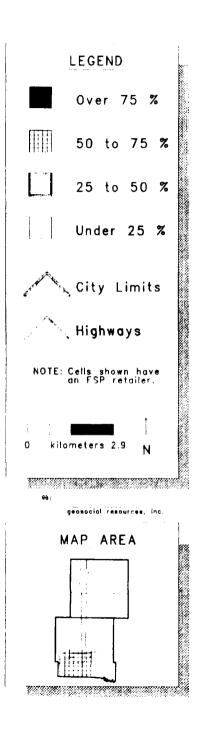




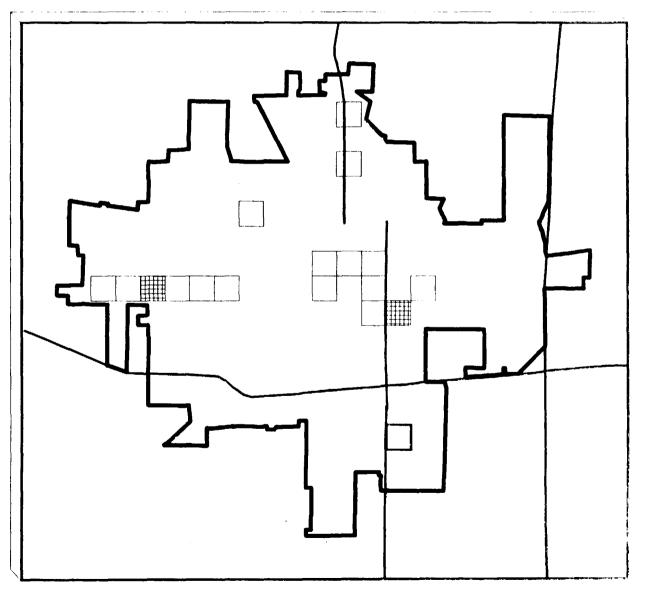
#### POS FS \$ as % Total FS \$:

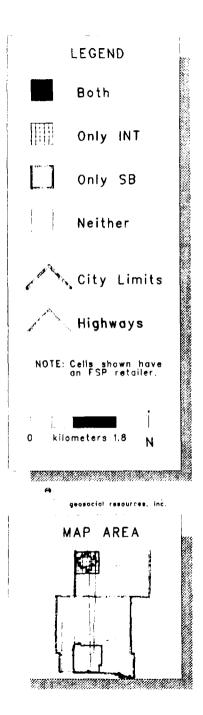
DesMoines and Environs



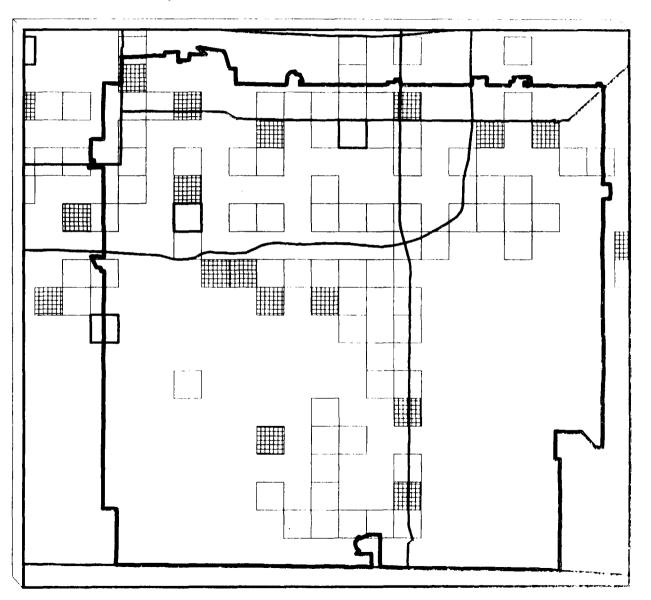


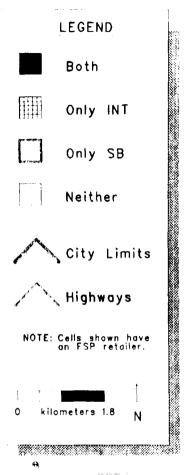
Integrated and Stand-Beside POS: Ames, lowa and Environs

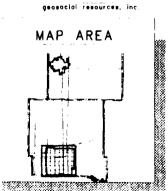


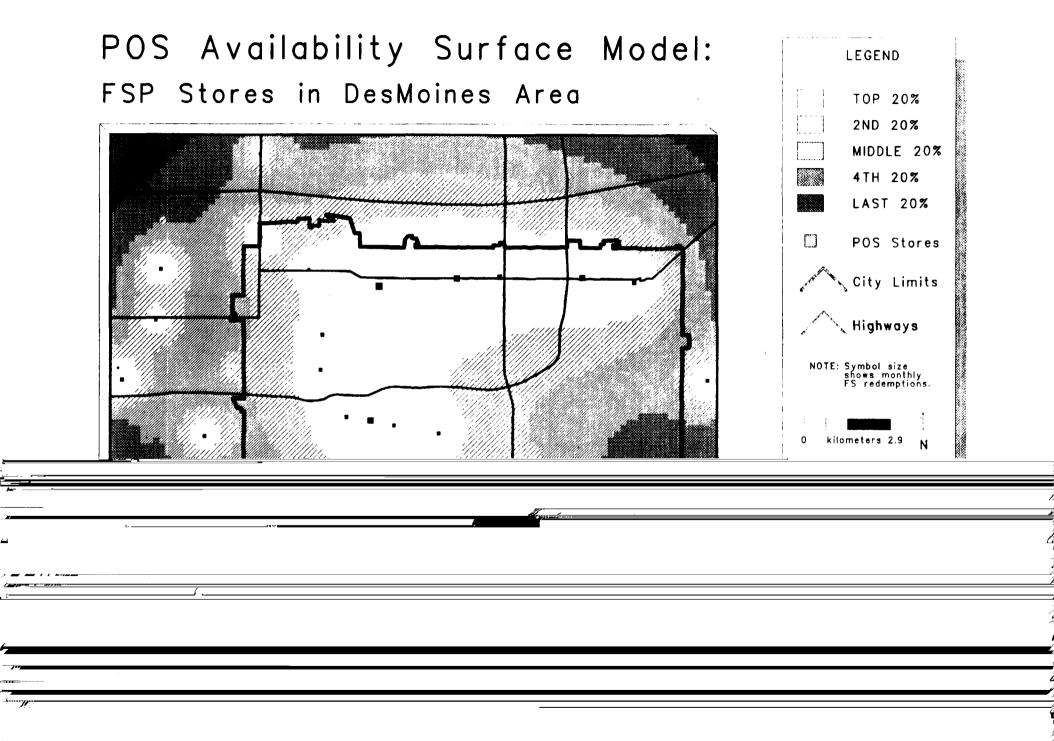


Integrated and Stand-Beside POS: DesMoines, Iowa and Environs

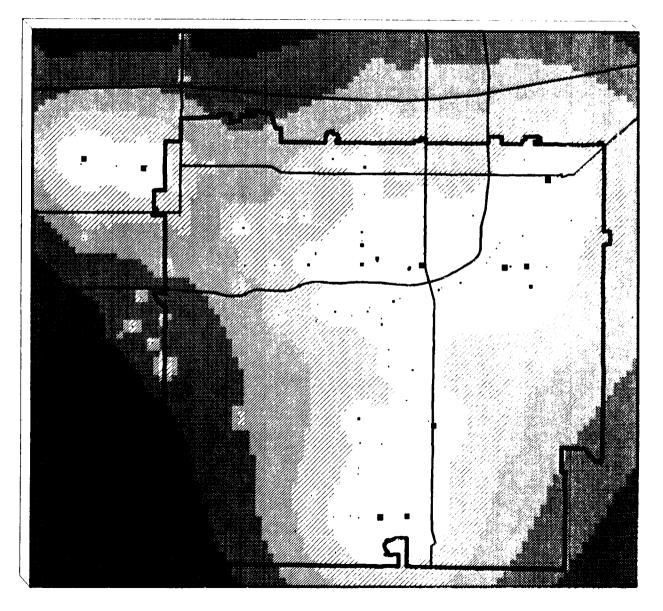


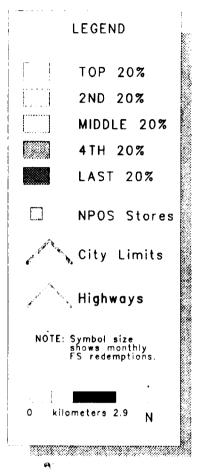


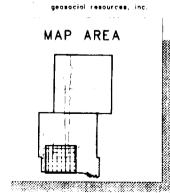




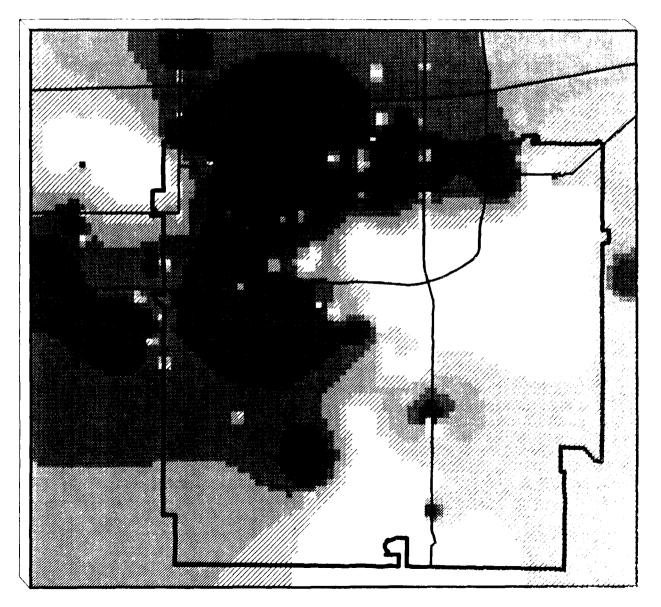
### NPOS Availability Surface Model: FSP Stores in DesMoines Area

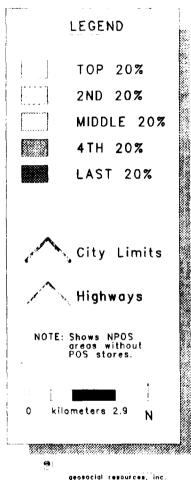


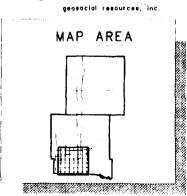




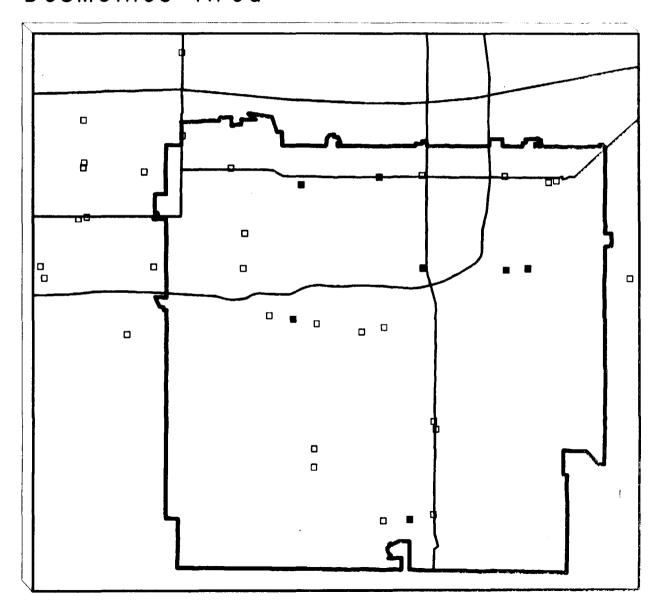
#### Model of NPOS without POS: FSP Stores in DesMoines Area

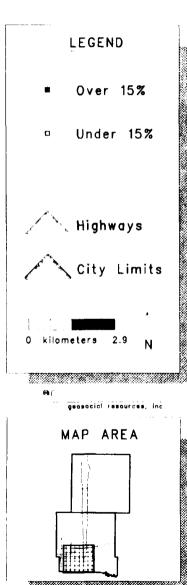




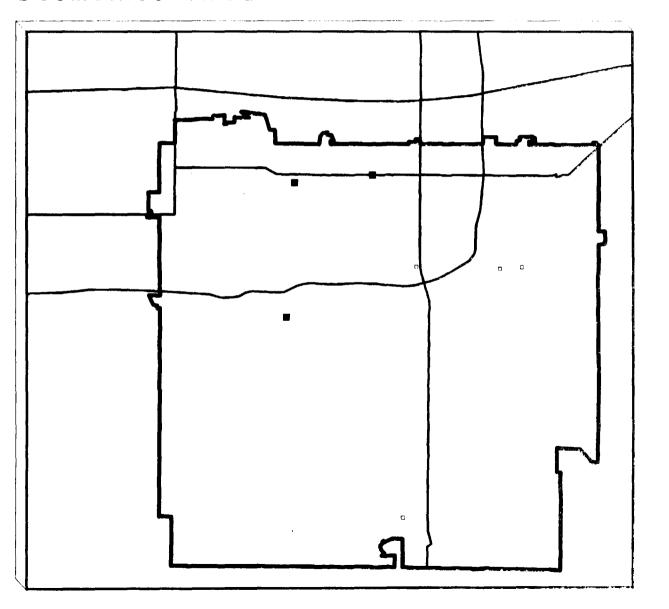


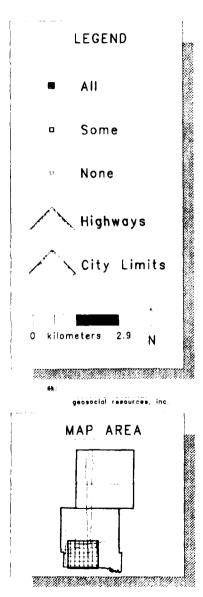
#### Supermarkets: FS as % of Food Sales DesMoines Area





#### POS Lanes in Supermarkets with 15% on FS DesMoines Area





#### Micro Focus St. Louis Area

The St. Louis study area consists of the City and County of St. Louis, Missouri as well as Madison and St. Clair counties in Illinois. The latter two counties are actually located in the FNS Midwest Region but are included in the Mountain Plains section because of their proximity to St. Louis.

Of the 1299 food stamp authorized retailers operating in the study area, 117, or 9.0 percent, accept debit cards for purchases. Figure E.5 illustrates this information for the whole study area and in each county.

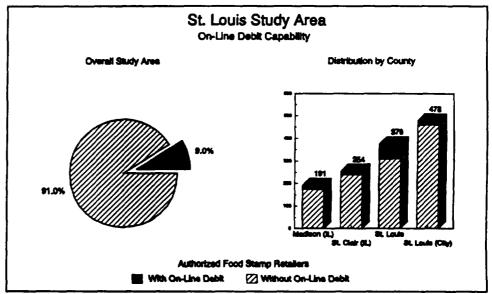


Figure E.5 (data as of September 1993)

BankMate (MO) is the major EFT network in the area, and all St. Louis area retailers switch transactions through this entity. BankMate fees are detailed in Table E.2.

Table E.2

BankMate Fee	Amount	
Card issuer switch fee	\$0.04 per transaction	
Acquiring bank switch fee	\$0.02 per transaction	
Interchange fee	0.02% "funds guarantee fee"	

Source: POS News Market Data Book, September 1993

All of the major supermarket chains in the St. Louis study area, including Dierberg's, National, Schnucks, and Shop 'N Save, accept debit cards for purchases. The only exception is Aldi Foods, a no-frills warehouse. Aldi has no plans to install any type of electronic payment system.

Aside from the major supermarket chains, there is little on-line debit activity in the study area. In fact, of the 117 food stamp authorized stores accepting debit cards for purchases, all but seven belong to one of four previously mentioned chains. Of the convenience store chains operating in the area, which include Seven-Eleven, Convenient Food Mart, Huck's Food and Fuel, and Quik Trip, none have on-line debit capability. Only Quik Trip has plans to deploy terminals in its stores for on-line debit.

#### Common Service Models Encountered

Dierberg's operates twelve supermarkets in the St. Louis study area. Each store uses VeriFone Tranz 340 terminals in a stand beside configuration. The terminals are linked by means of a local area network to a back-room processor which sends transactions to Deluxe Data Systems. This scenario is similar to that used by Shop 'N Save in the southeast New Hampshire study area, with the VeriFone terminals replacing Shop 'N Save's IVI T3Ls and BankMate being the network of choice.

With 39 stores in the St. Louis study area, National Super Markets is second only to Schnucks in number of locations. The majority of National stores use Concord LINX 1000 stand beside terminals. The remainder have VeriFone Pinstripe terminals in a stand beside configuration. In both cases the terminals are connected by a LAN to an in-store processor located in the service booth of each

<sup>1</sup> based on amount of purchase

store. Transactions are picked up by Concord and switched to BankMate. National is moving towards becoming its own switch and expects to begin routing on-line debit transactions within six months.

Schnucks is the largest supermarket chain in the St. Louis study area, with 42 locations. All stores are equipped with Concord Linx 1000 MSR/PIN pads in a stand beside configuration. Transactions are sent from an in-store processor through Concord, which switches the transaction to either BankMate or EFT Illinois.

Both the National and Schnucks scenarios are similar to that used by ACME in the Essex County, New Jersey and New Castle County, Delaware study areas. ACME's service model, option 2, is diagrammed in Figure B.3.

Shop 'N Save operates 17 warehouse-type stores in the St. Louis study area. Shop 'N Save uses common service model option 2, similar to that used by the southeastern New Hampshire Shop 'N Save stores. Each store has stand beside VeriFone 175 MSR/PIN pads installed in each lane. The terminals are connected by means of a local area network to a modem which sends transactions to Comdata, the third party processor. BankMate acts as regional network switch.

EBT Readiness in the St. Louis Study Area

With only nine percent of retailers offering on-line debit at their locations, the St. Louis study area ranks sixth of the twelve study areas in terms of level of terminal deployment. However, because these retailers are almost exclusively supermarkets, they account for a substantially larger portion of food stamp redemptions. This information is illustrated in Figure E.6.

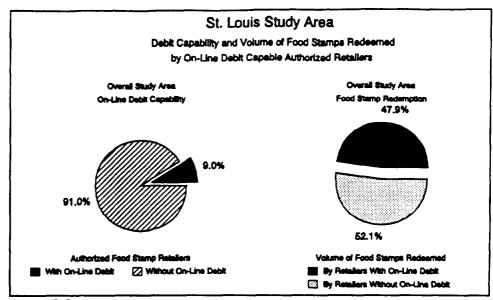


Figure E.6

Table E.3 depicts how these retailers comply with FNS regulations for level of terminal deployment.

Table E.3

Retailer Type	Lev	Level of Deployment <sup>1</sup>		
	Full	Part	None	Total
A	5	13	579	597
В	90	3	38	131
С	6	0	565	571
Total	101	16	1182	1299

#### egend

Avg. Monthly FS sales > 15% total food sales ⇒ all lanes must be deployed. All retailer types.

Note that most retailers, based on their current level of food stamp redemptions, will be required to deploy terminals in all of their checkout lanes.

B: Supermarkets: Avg. monthly FS sales < 15% total food sales ⇒ one terminal for each \$11,000 in monthly FS volume up to # of lanes in store.

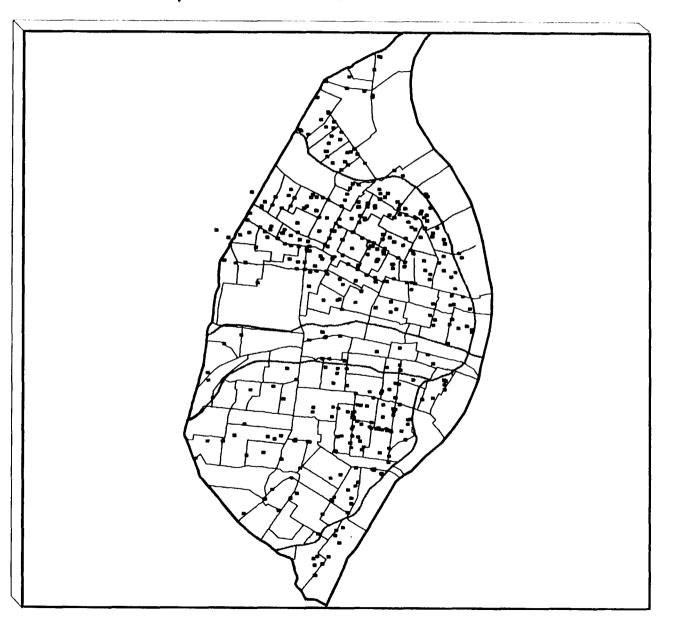
C: All others: Avg. monthly FS sales < 15% total food sales ⇒ one terminal for each \$8,000 in monthly FS volume up to # of lanes in store.</p>

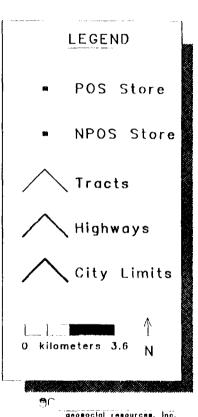
<sup>&</sup>lt;sup>1</sup> Retailers fully, partially, or not at all meeting the regulatory requirement for terminal deployment as set forth in 7 CFR \$274.12(g)(4)(ii).

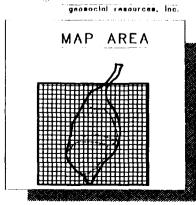
M	aps
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Immediately following this page are presented four color and fifteen monochromatic maps for this study area. The content and views depicted are described generically in the introduction to Technical Report #2.

#### POS, Non-POS Retailers in FS Program: St. Louis, Missouri

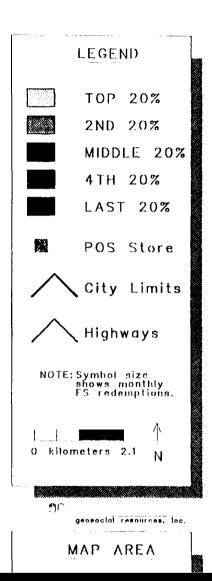






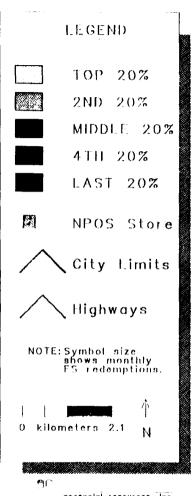
### POS Availability Model: FSP Stores in St. Louis

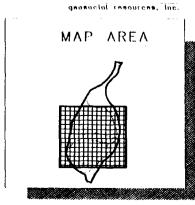




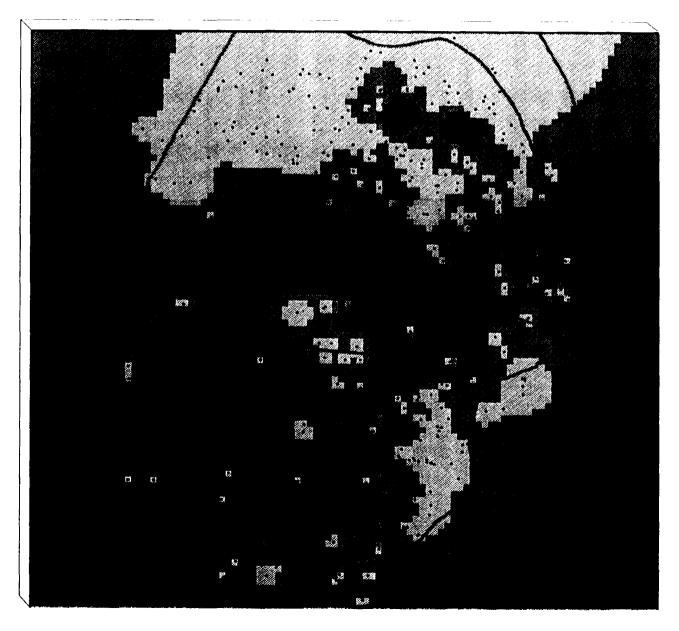
### NPOS Availability Model: FSP Stores in St. Louis

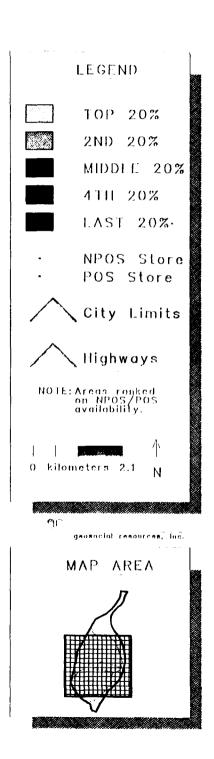




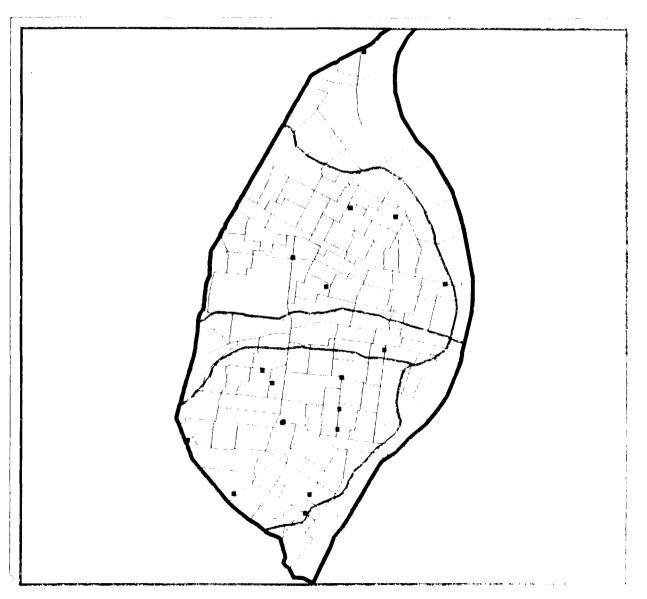


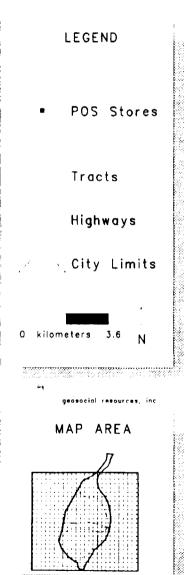
## Model of NPOS without POS: FSP Stores in St. Louis



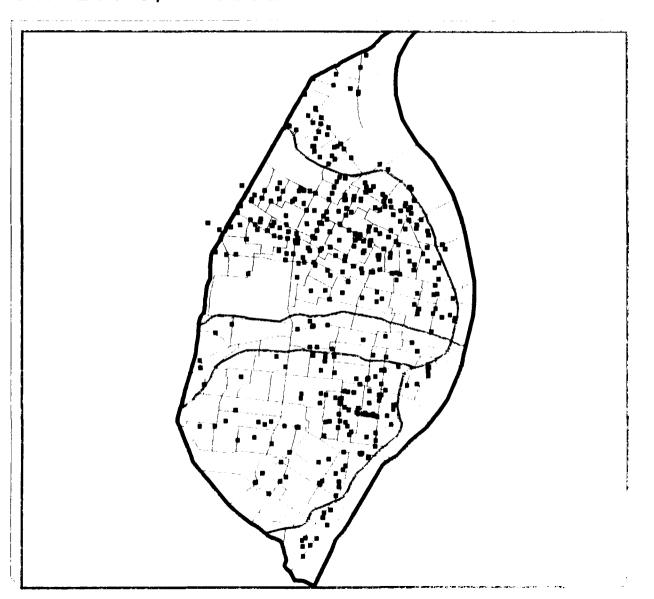


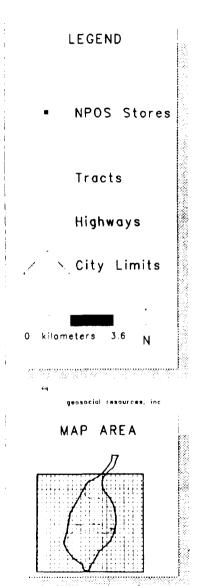
#### POS-Equipped Retailers in FS Program: St. Louis, Missouri



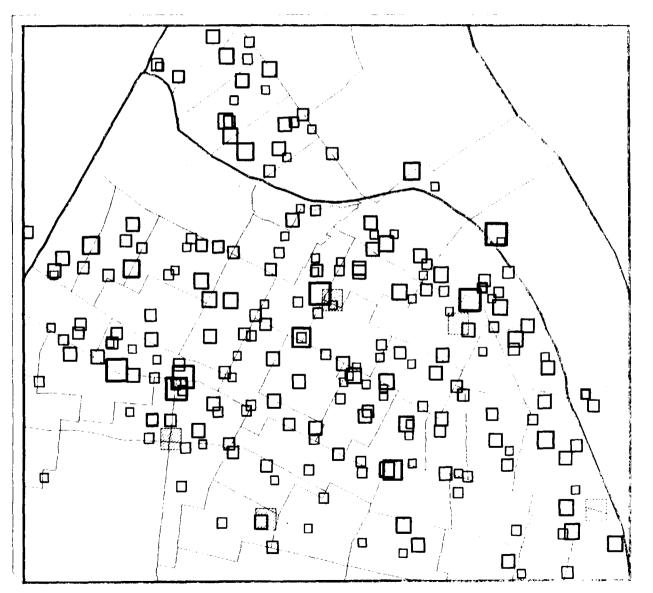


#### Non-POS-Equipped Retailers in FS Program: St. Louis, Missouri



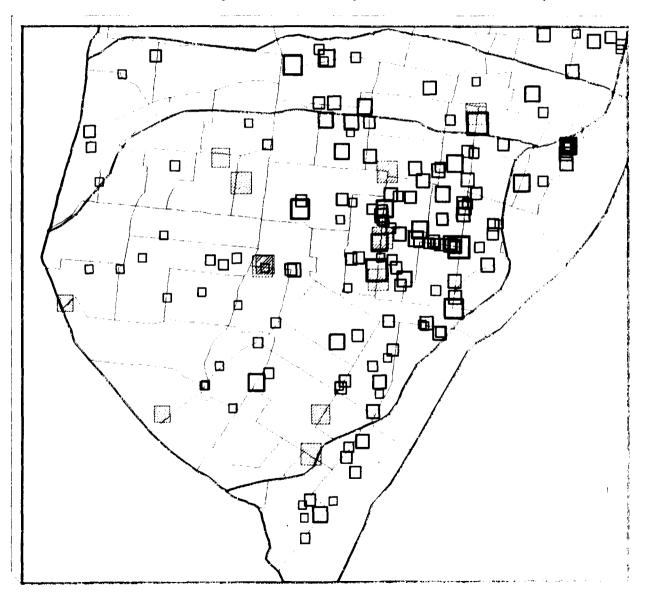


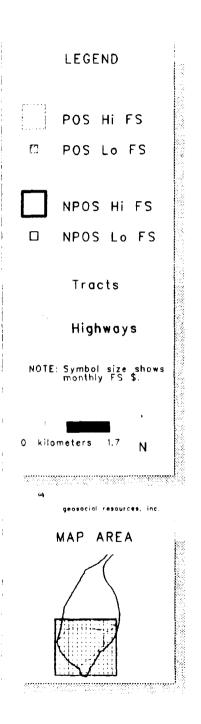
POS and Non-POS FSP Retailers
N St.Louis, by Monthly FS Redemptions



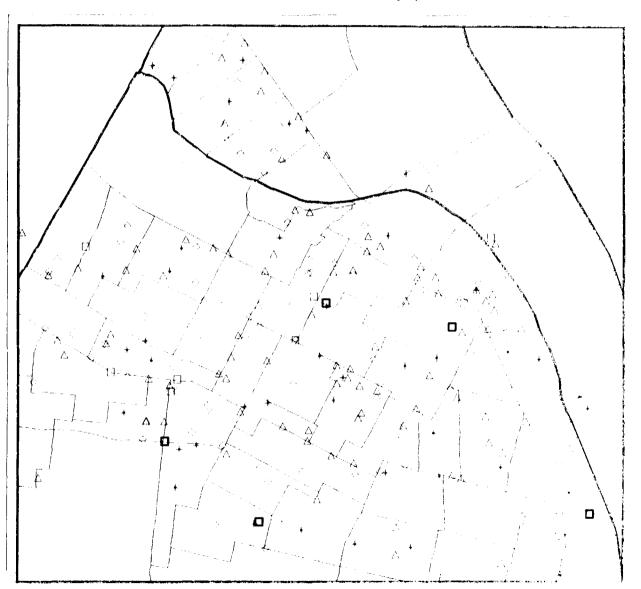
LEGEND POS HI FS POS Lo FS NPOS HI FS NPOS Lo FS Tracts Highways NOTE: Symbol size shows monthly FS \$. 0 kilometers 1.3 geosocial resources, inc MAP AREA

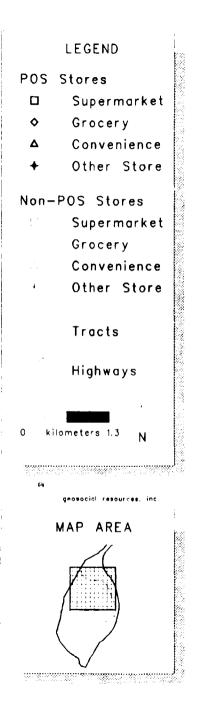
POS and Non-POS FSP Retailers
S St.Louis, by Monthly FS Redemptions



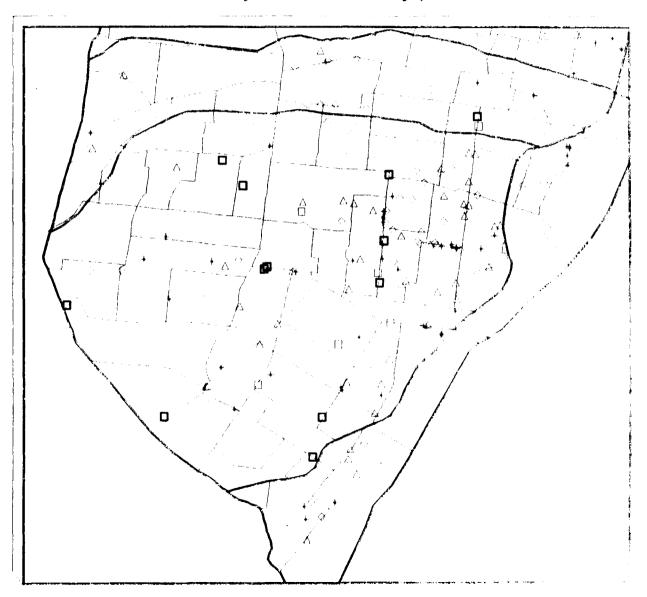


## POS and Non-POS FSP Retailers N St. Louis, by Store Type





#### POS and Non-POS FSP Retailers S St. Louis, by Store Type



#### LEGEND

#### POS Stores

- Supermarket
- ♦ Grocery
- △ Convenience
- + Other Store

Non-POS Stores

Supermarket

Grocery

 ${\tt Convenience}$ 

Other Store

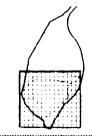
Tracts

Highways

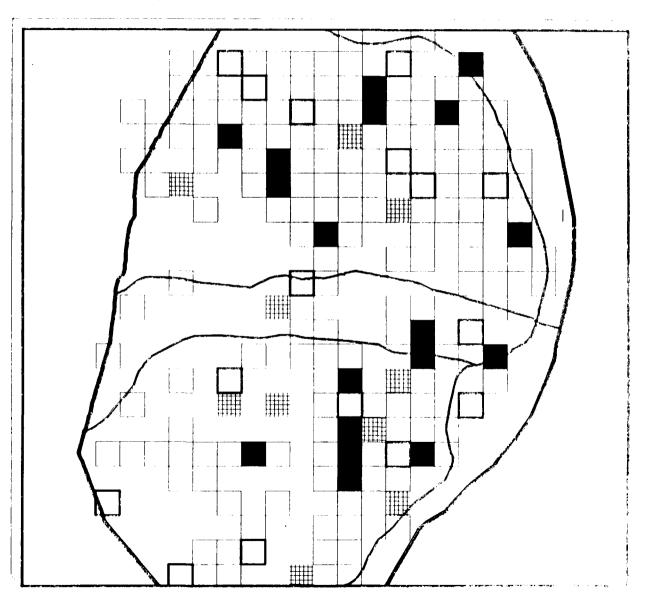
0 kilometers 1.7

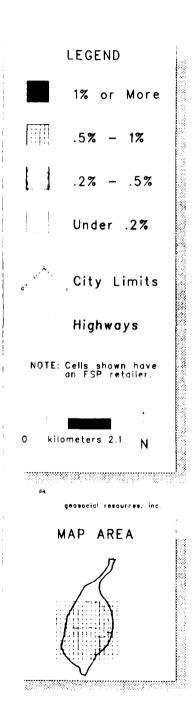
geasocial resources, inc.

MAP AREA

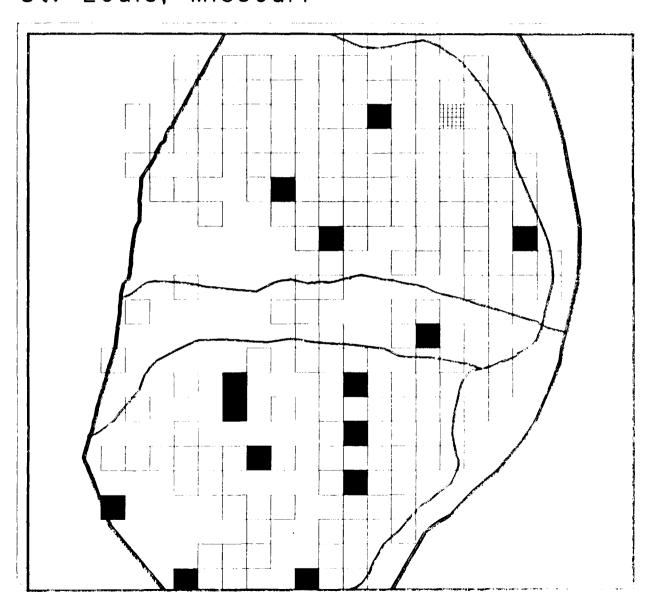


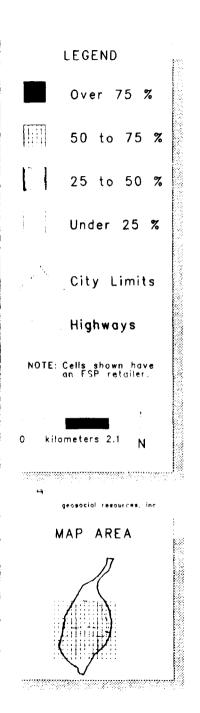
#### Percentage of County FS \$: St. Louis, Missouri



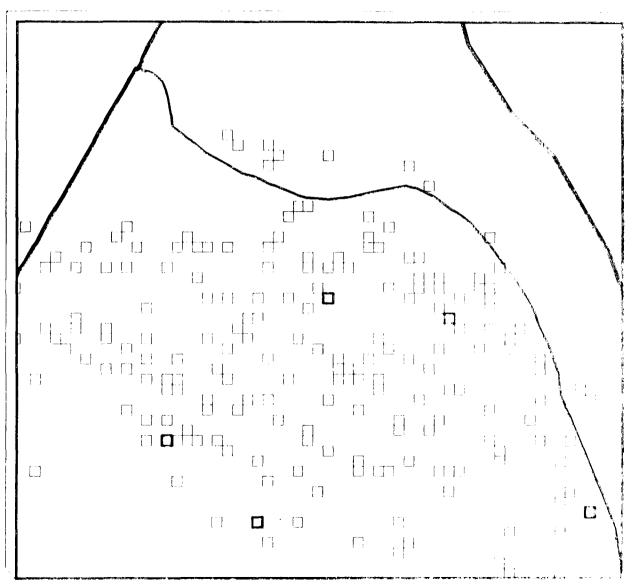


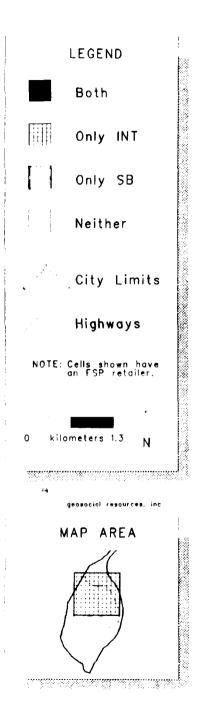
## POS FS \$ as % Total FS \$: 'St. Louis, Missouri



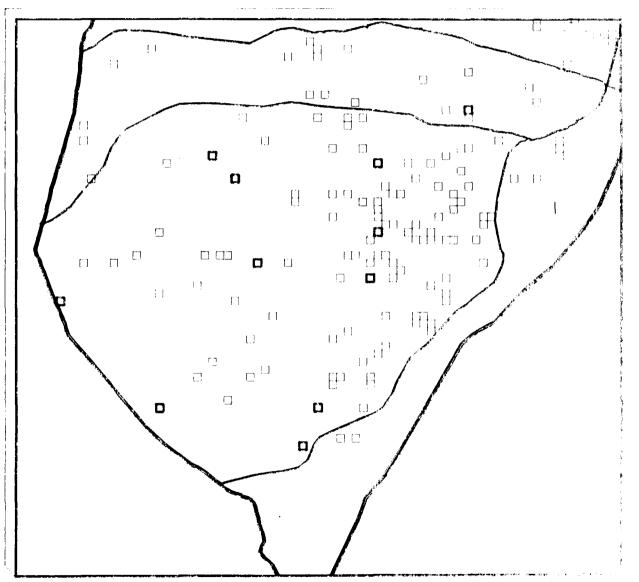


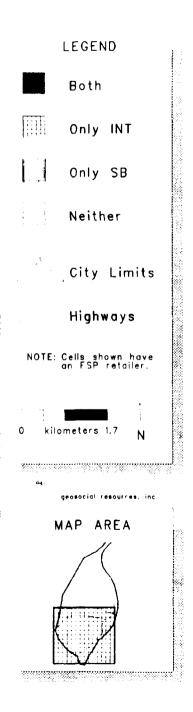
#### Integrated and Stand-Beside POS: N St. Louis, Missouri





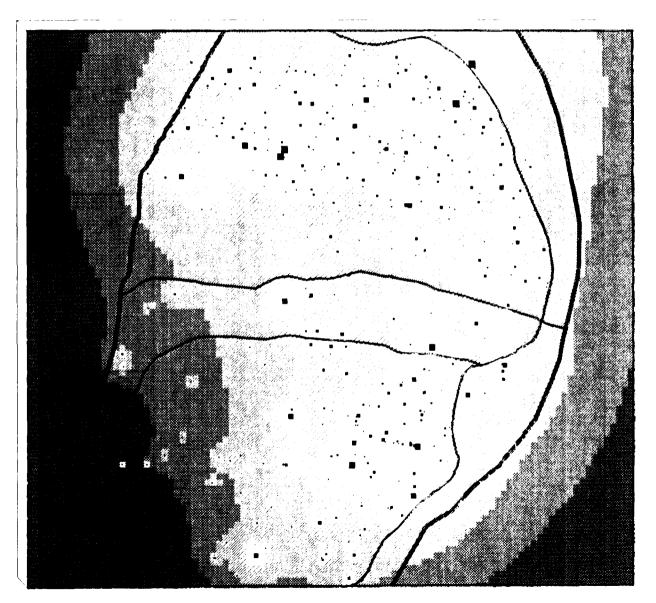
Integrated and Stand-Beside POS: S St. Louis, Missouri





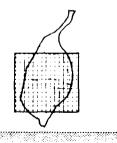
# POS Availability Surface Model: FSP Stores in St. Louis TOP 20% 2ND 20% MIDDLE 20%

#### NPOS Availability Surface Model: FSP Stores in St. Louis



LEGEND TOP 20% 2ND 20% MIDDLE 20% 4TH 20% LAST 20% NPOS Stores City Limits Highways NOTE: Symbol size shows monthly FS redemptions. kilometers 2.1





## Model of NPOS without POS: FSP Stores in St. Louis



LEGEND

TOP 20%

2ND 20%

MIDDLE 20%

4TH 20%

LAST 20%

City Limits

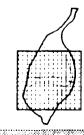
Highways

NOTE: Shows NPOS areas without POS stores.

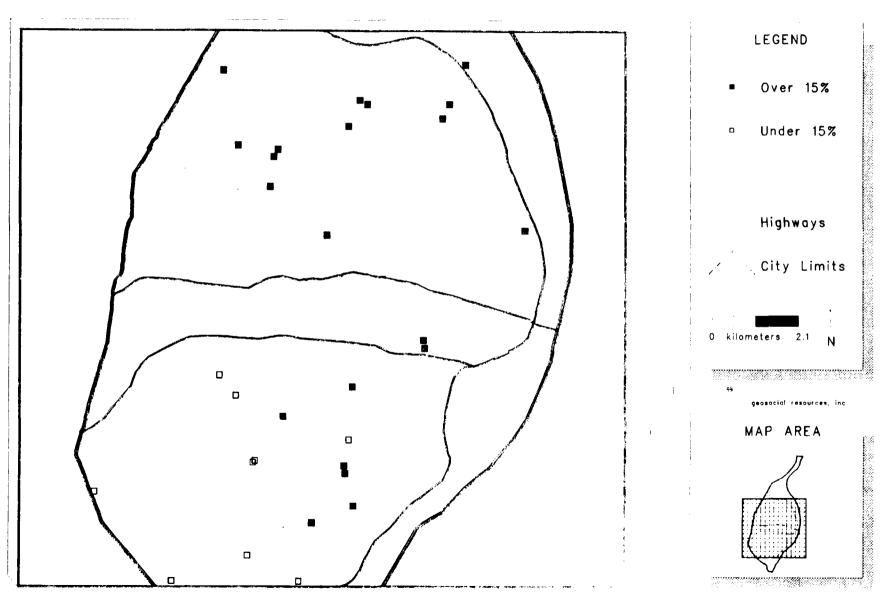
0 kilometers 2.1

geosocial resources, inc.

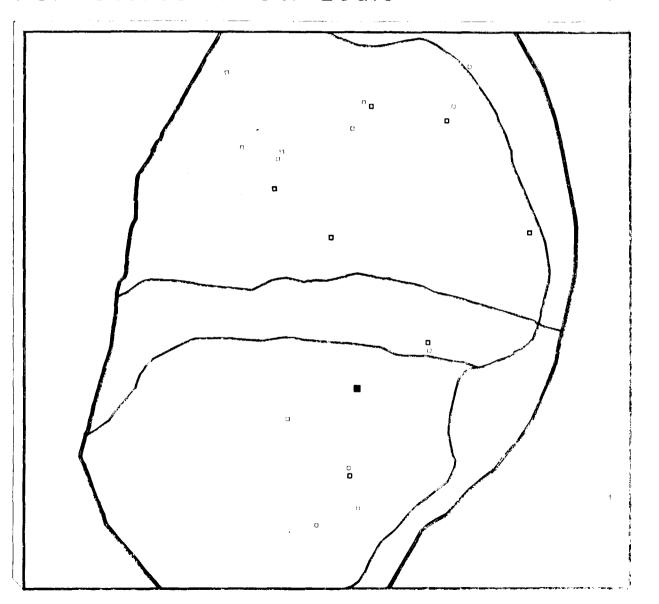
MAP AREA

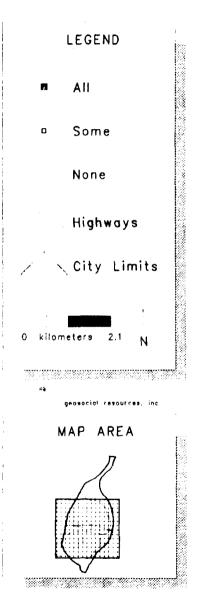


Supermarkets: FS as % of Food Sales FSP Stores in St. Louis



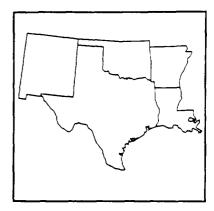
POS Lanes in Supermarkets with 15% on FS FSP Stores in St. Louis





#### F. SOUTHWEST REGION

The FNS Southwest Region consists of Arkansas, Louisiana, New Mexico, Oklahoma, and Texas. The dominant EFT network in the region is PULSE, which is based in Houston and operates in all five states in the region. PULSE has a well-developed on-line debit program, attracting retailers such as Mobil, Exxon, and Circle K. Retailers are spread out around the five-state area, with a concentration in the Houston market.



Smaller networks have developed in certain segments of the region: SunWest Bank's BankMate network in New Mexico; First National Bank in Albuquerque's Money Network; and Bank of Oklahoma's TransFund network. TransFund is the only network of the three that does not currently have an on-line debit program; however, this is expected to change soon.

Micro Focus Houston Study Area

The Houston area is one of two sites in the Southwest region selected by FNS for analysis of the POS terminal infrastructure. The Houston study area consists of Harris County, which contains the City of Houston, and the less populated Chambers County, located to the south. The difference in size, as measured by the number of food retailers located in each area, is so great between the two counties that of the 2479 food stamp authorized retailers in the study area, only 26 are located in Chambers County.

The PULSE network is the only EFT network offering on-line debit transaction switching to the Houston study area. PULSE charges a \$0.06 switch fee, split between the card issuing and acquiring banks.

#### Research Methodology

The research effort for the Houston study area consisted of the following:

- obtaining a list from the PULSE network of retailers accepting debit cards for purchases;
- comparing this list to a dataset supplied by FNS in order to identify all food stamp authorized retailers with on-line debit; and
- contacting these retailers for information on their on-line debit programs.

Major food stamp authorized retailers accepting PULSE cards for purchases include the above mentioned Exxon, Mobil, and Circle K, as well as Diamond Shamrock, Fiesta, Foodarama, Gerland's, Kroger, Randall's, Rice Markets, and Stop 'N Go. In all, 427 of the 2,479 food stamp authorized retailers in the Houston study area accept debit cards for purchases. Figure F.1 depicts this information.

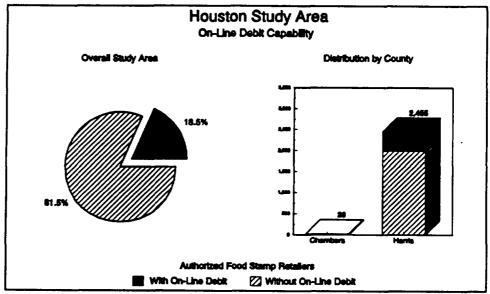
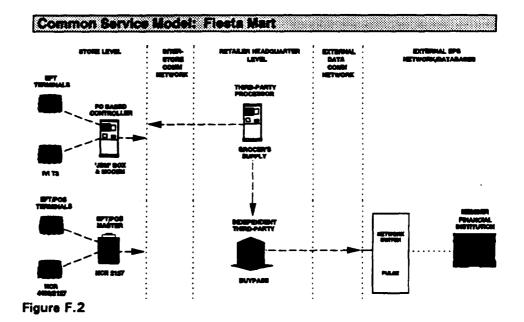


Figure F.1 (data as of August 1993)

#### Common Service Models Encountered

Circle K convenience stores in the Houston area have perhaps the simplest payment system configuration of all retailers in the study area. Each of these stores has one Datacard Datatrol 3203 terminal, which stands alone from the cash register. After the purchase amount is entered into the terminal by the cashier, the transaction is sent by way of a non-dedicated "dial-up" connection to BUYPASS the System. BUYPASS switches transactions to PULSE. A Circle K official noted that the company will replace the Datacard terminals with VeriFone PNC 330s by early 1994.

Stop 'N Go convenience stores, of which there are over 250 in the study area, have a similar configuration. Each store is equipped with a Diebold React 330 terminal which dials directly to BUYPASS. Store officials indicated that the Diebold terminals will be phased out in favor of VeriFone Omni 480s beginning in the summer of 1993. Both the Circle K and Stop 'N Go service models are similar to the small retailer scenario diagrammed in Figure A.2.



Electronic payment systems in Fiesta Mart stores are a step up in complexity from the last two examples. Each Fiesta Mart has one

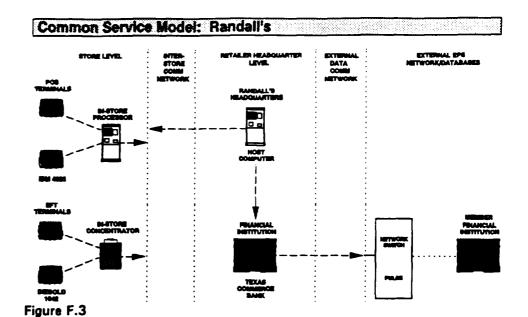
of two different electronic payment systems. The first consists of stand beside IVI T3 MSR/PIN pads, the second, NCR 2127 ECRs with integrated NCR 4430 MSR/PIN pads. In the IVI system, the T3s are connected to a PC-based controller in the back of the store. The controller sends the transactions to a device called a 'JBM box' which translates the message into the proper format. The JBM box then connects to a modem which sends the transaction to Grocer's Supply, the dominant wholesaler/EPS provider in the Houston area. Grocer's Supply then passes the transaction onto BUYPASS, which connects to PULSE. This scenario, common service model option 2, is diagrammed in Figure F.2.

The NCR system uses the 2127 ECRs in a "master/slave" configuration. EFT transactions are sent from the 4430s through a "slave" 2127 to the "master" 2127. The "master" 2127 sends the transaction out to Grocer's Supply, at which point it follows the path of transactions in the first service model. Refer to Figure F.2 to follow the route of a transaction under this scenario.

Gerland's Food Fair, another major food retailer in the Houston area, also uses an NCR 2127/4430 system for electronic payments. Each store has a master register, located in the courtesy booth, which collects and routes the transactions to Grocer's Supply. Grocer's Supply sends transactions to BUYPASS for switching to PULSE.

Randall's stores have one of two types of electronic payment systems. The first consists of IBM 4683 ECRs with built-in magnetic stripe readers and VeriFone 201 PIN pads. The ECRs are linked to an in-store processor which relays the debit transactions to a host Tandem computer at company headquarters. This system is installed in nine new stores in the Houston area. The second configuration consists of stand beside Diebold 1042 terminals connected to a concentrator in the back of the store. This processor collects all transactions and sends them onto the Tandem mainframe. Transactions are routed through Texas Commerce Bank to Pulse. Both of these option 2 scenarios are diagrammed in Figure F.3.

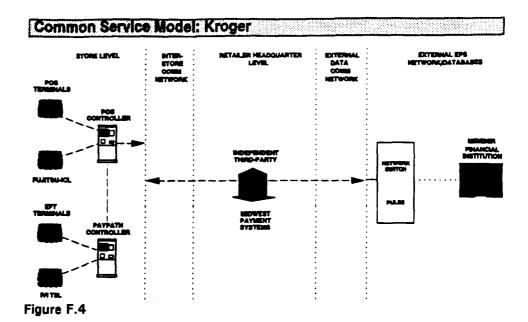
The majority of Kroger stores in the Houston area have an integrated electronic payments system consisting of Fujitsu-ICL



ECRs in each lane connected to a controller ("POS controller") in the back room. At each lane, there is an IVI T3L MSR/PIN pad. The T3Ls are connected via a local area network to a second controller, a 386-based machine ("Paypath controller") running Unix. The POS controller and the Paypath controller are connected by means of an asynchronous link.

An on-line debit transaction in this system proceeds as follows: the clerk totals the purchase and selects the "debit" key on the ECR. The customer swipes his or her debit card and enters his or her PIN. An electronic message, consisting of the customer's account number and PIN number, is sent from the T3L to the Paypath controller, where it matches with a message containing purchase amount coming from the ECR in the particular lane. The transaction is then sent to Midwest Payment Systems for routing to PULSE. When the store receives authorization for the transaction, a message is sent back to the appropriate ECR and a receipt is printed. Figure F.4 diagrams this service model.

Two of the Kroger stores in the study area have a stand beside system which consists of the IVI T3L terminals mentioned above, but adds an additional printer and keyboard to complete the capability. With this system, terminals are connected to a IBM P/S 2 controller located in the back of the store. Debit



transactions are sent from this controller to Midwest Payment Systems, which switches them to PULSE.

EBT Readiness in the Houston Study Area

The Houston study area has the highest percentage of food stamp authorized retailers accepting debit cards 18.5 of the twelve study areas. These 18.5 percent account for the fifth-highest percentage of food stamp redemptions. Figure F.5 compares the percentage of retailers with on-line debit to the percentage of food stamp redemptions accounted for by these retailers.

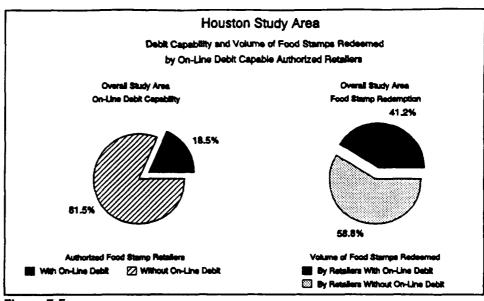


Figure F.5

Table F.2 shows that all but four of the 427 food stamp authorized retailers with on-line debit are in compliance with FNS regulations governing terminal deployment levels. Also note that a significant number of retailers which presently do not have online debit will be required to have terminals in all checkout lanes.

Table F.2

Retailer Type	Level of Deployment <sup>1</sup>			
	Full	Part	None	Total
Α	64	_3	1048	1115
В	103	0	117	220
С	256	1	887	1144
Total	423	4	2052	2479

#### Legend A:

Avg. Monthly F8 sales > 15% total food sales ⇒ all lanes must be deployed. All retailer types.

B: Supermarkets: Avg. monthly FS sales < 15% total food sales ⇒ one terminal for each \$11,000 in monthly FS volume up to # of lanes in store.

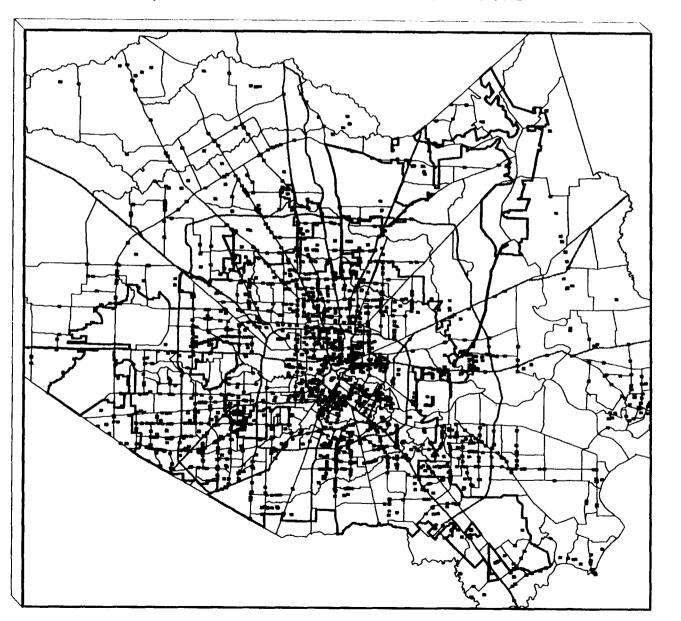
C: All others: Avg. monthly FS sales < 15% total food sales ⇒ one terminal for each \$8,000 in monthly FS volume up to # of lanes in store.

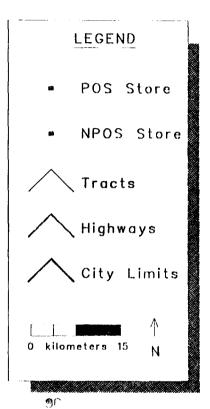
<sup>1</sup> Retailers fully, partially, or not at all meeting the regulatory requirement for terminal deployment as set forth in 7 CFR \$274.12(g)(4)(ii).

Mac	S
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Immediately following this page are presented four color maps and eighteen monochromatic maps for this study area. The content and views depicted are described generically in the introduction to Technical Report #2.

POS, Non-POS Retailers in FS Program: Houston, Texas and Environs

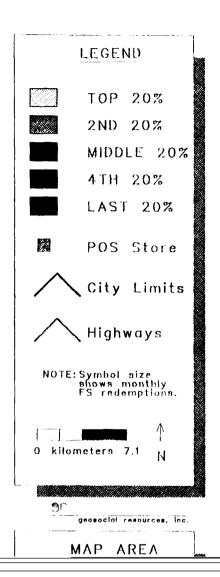




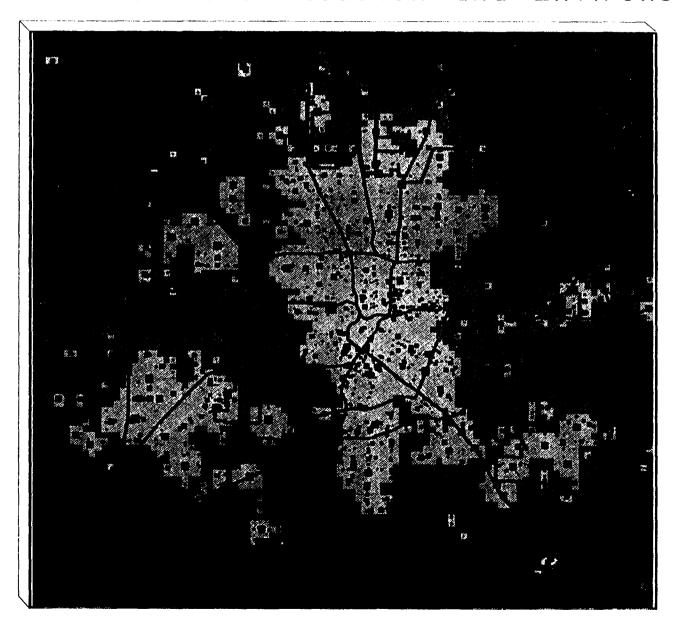


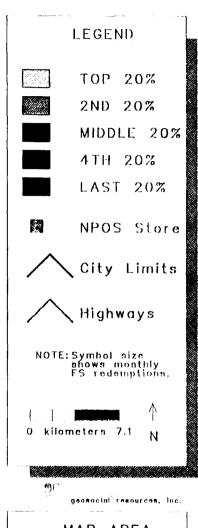
### POS Availability Model: FSP Stores in Houston and Environs

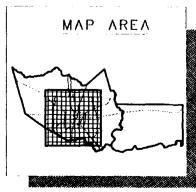




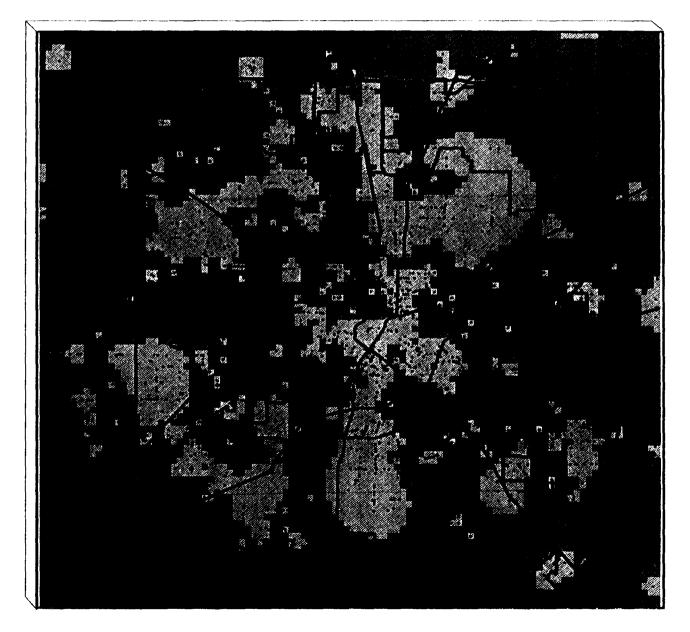
### NPOS Availability Model: FSP Stores in Houston and Environs

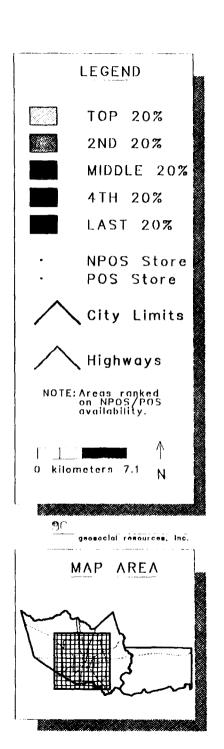




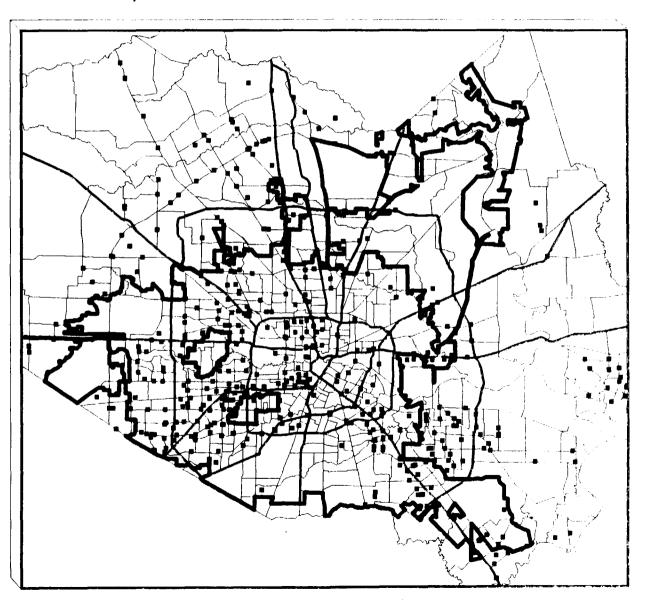


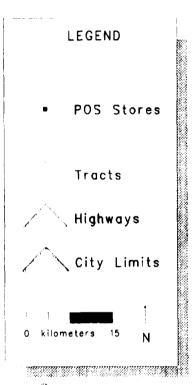
## Model of NPOS without POS: FSP Stores in Houston and Environs

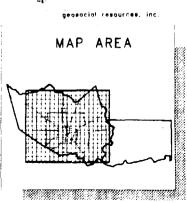




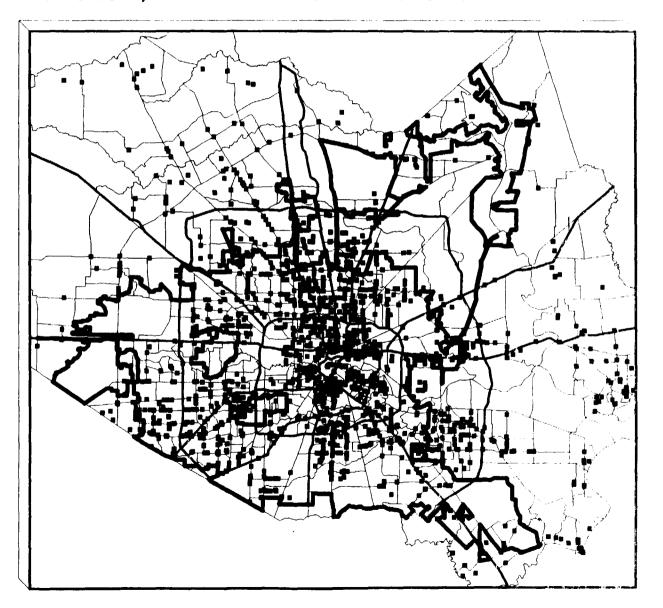
### POS-Equipped Retailers in FS Program: Houston, Texas and Environs

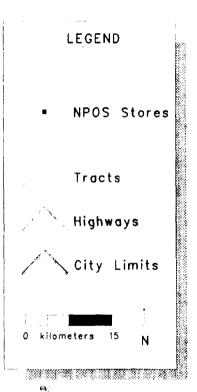


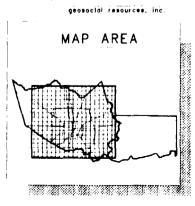




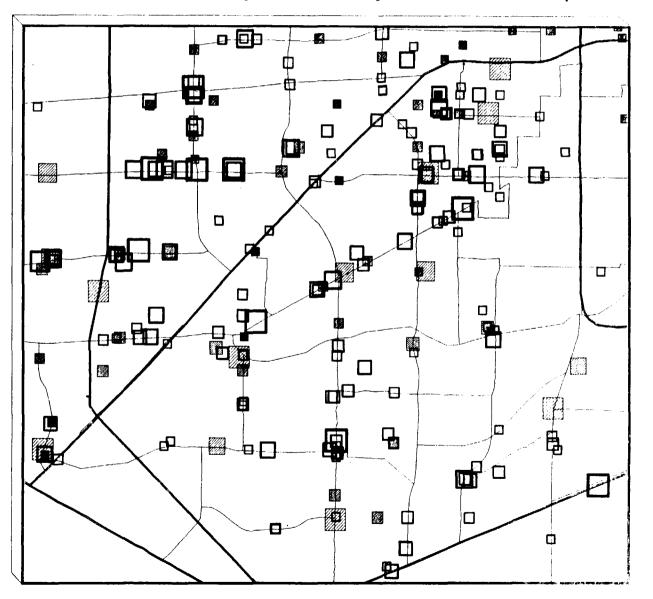
### Non-POS-Equipped Retailers in FS Program: Houston, Texas and Environs

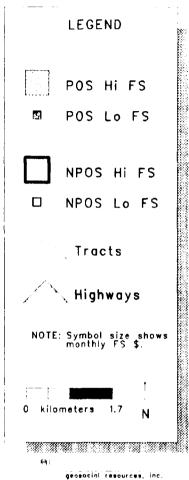


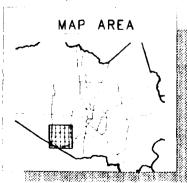




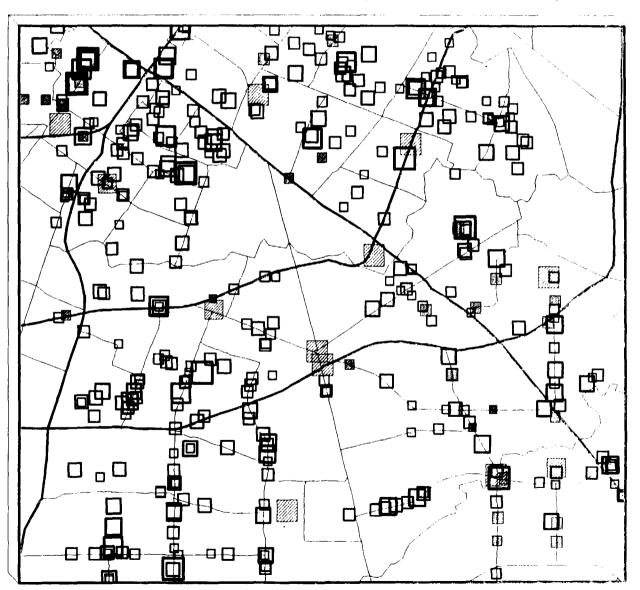
POS and Non-POS FSP Retailers SW Houston, by Monthly FS Redemptions

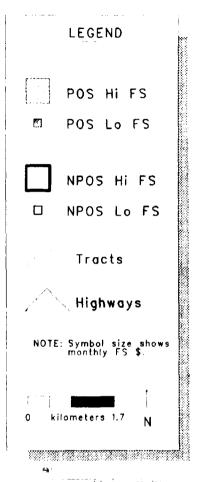


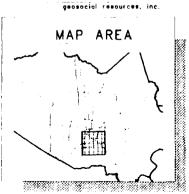




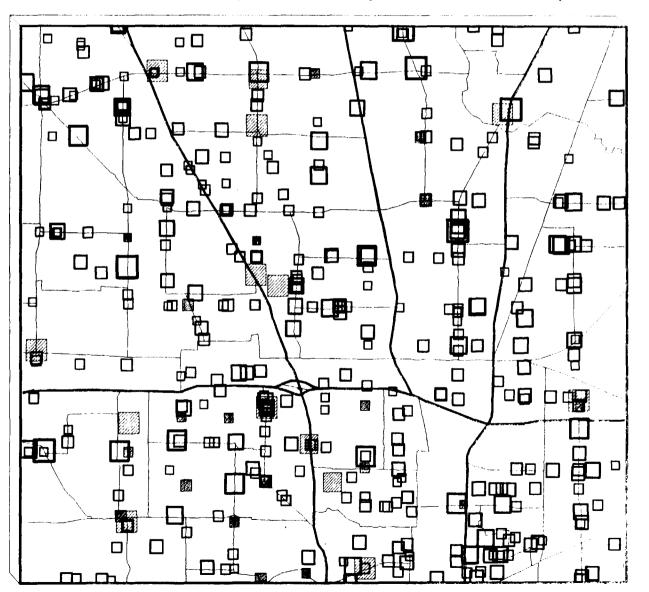
POS and Non-POS FSP Retailers SE Houston, by Monthly FS Redemptions







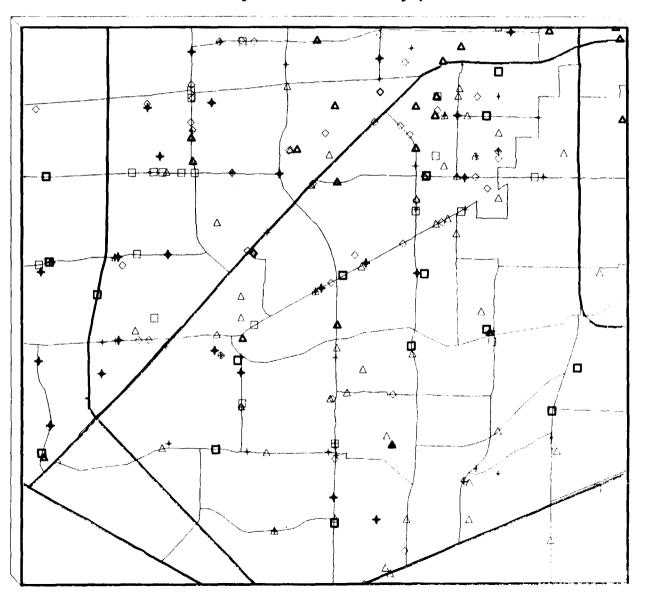
POS and Non-POS FSP Retailers NC Houston, by Monthly FS Redemptions



LEGEND POS HI FS POS Lo FS NPOS HI FS NPOS Lo FS Tracts **Highways** NOTE: Symbol size shows monthly FS \$. kilometers 1.7 geosocial resources, inc.



### POS and Non-POS FSP Retailers SW Houston, by Store Type



### LEGEND

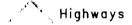
#### POS Stores

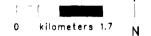
- Supermarket
- Grocery
- Convenience
- Other Store

#### Non-POS Stores

- Supermarket
  - Grocery
- Convenience
- Other Store

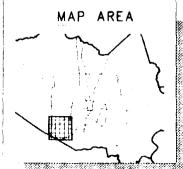
Tracts



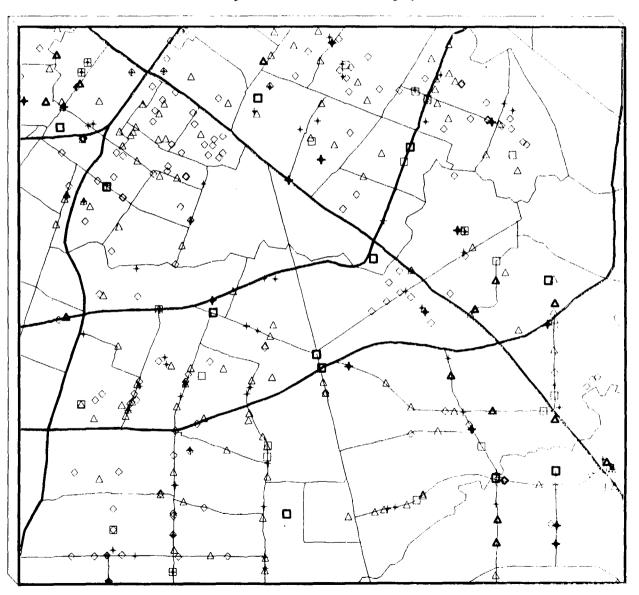


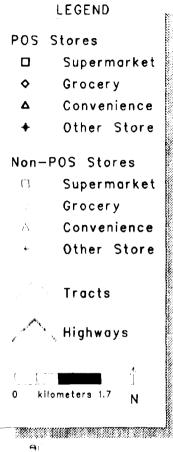


geosacial resources, inc.



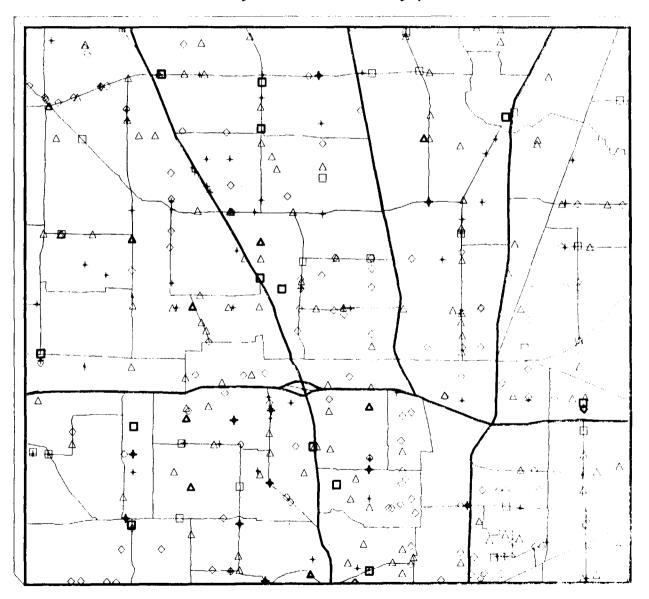
## POS and Non-POS FSP Retailers SE Houston, by Store Type

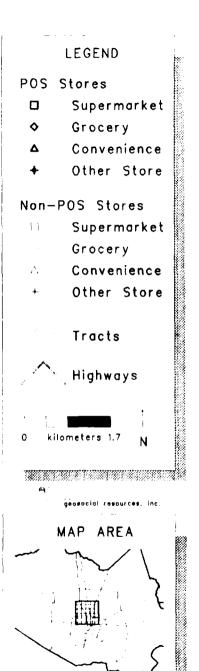




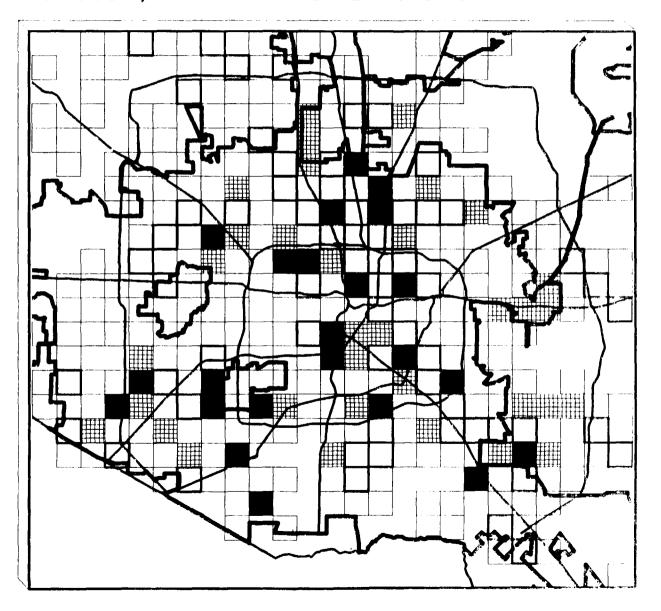


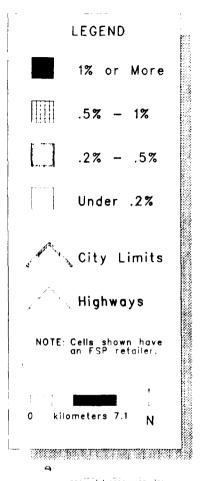
## POS and Non-POS FSP Retailers NC Houston, by Store Type

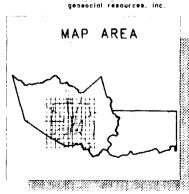




### Percentage of County FS \$: Houston, Texas and Environs

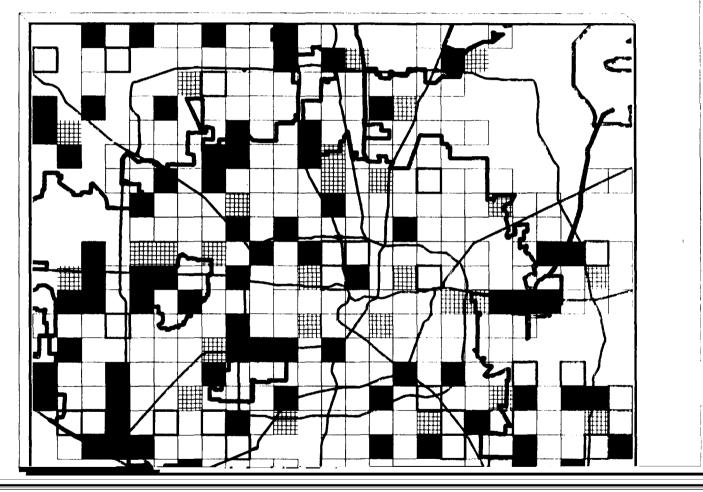






POS FS \$ as % Total FS \$:

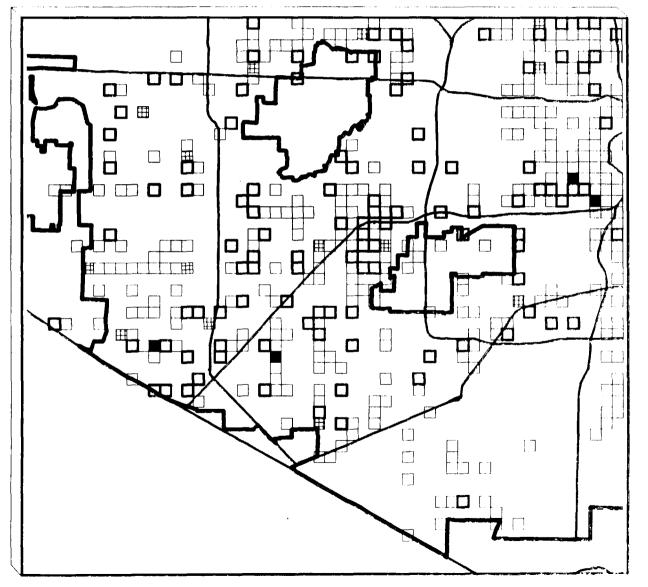
Houston, Texas and Environs

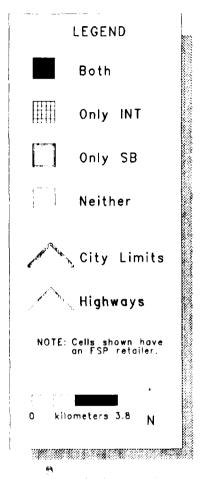


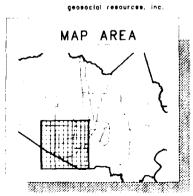
LEGEND Over 75 % 50 to 75 % 25 to 50 % Under 25 % City Limits ∠^\_\_ Highways NOTE: Cells shown have an ESP retailer. 0 kilometers 7.1 N geosocial resources, inc.

MAP AREA

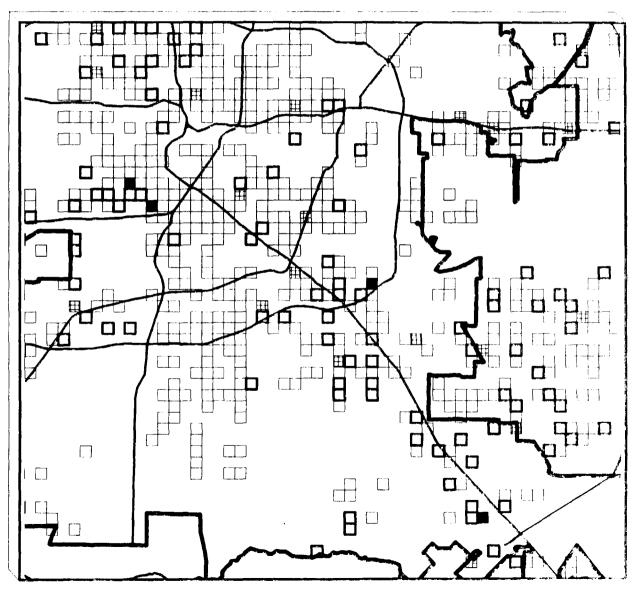
Integrated and Stand-Beside POS: SW Houston, Expanded View

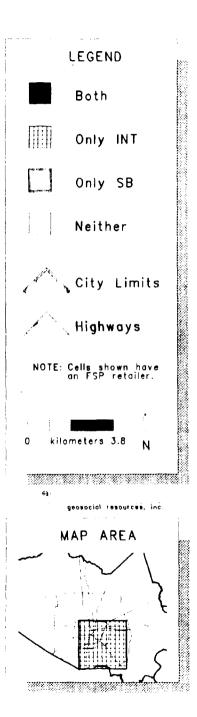




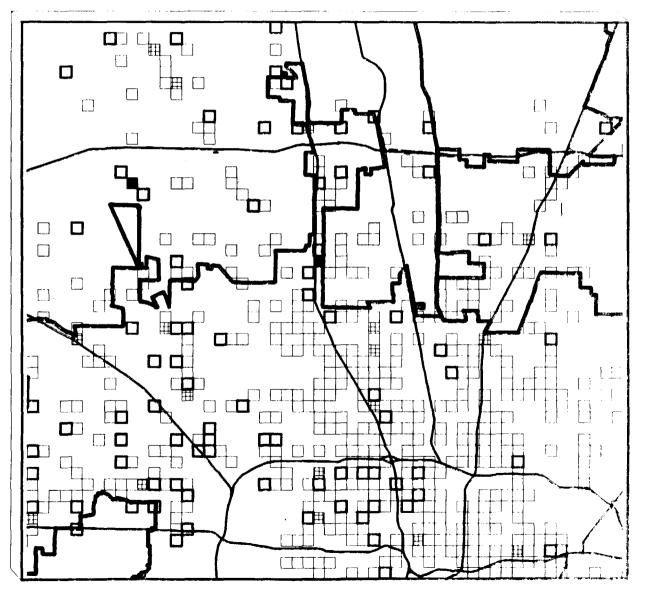


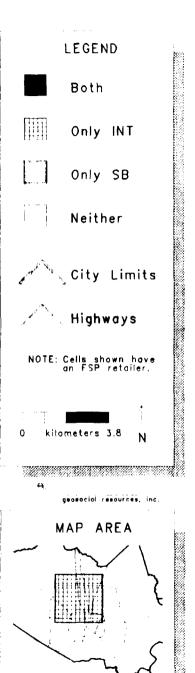
Integrated and Stand-Beside POS: SE Houston



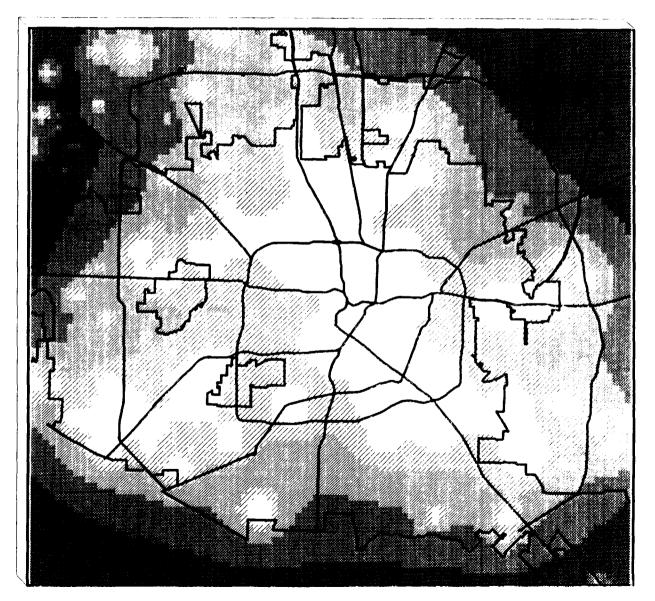


# Integrated and Stand-Beside POS: NC Houston

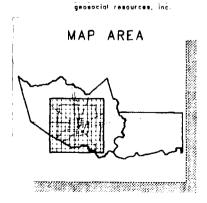




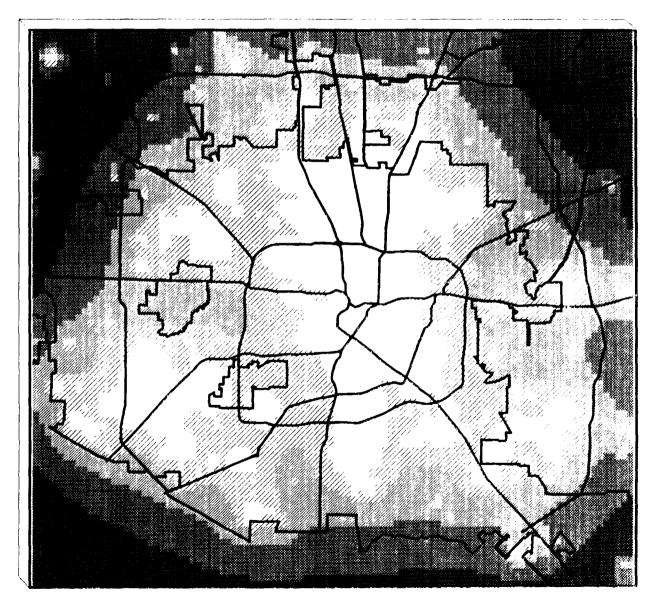
## POS Availability Surface Model: FSP Stores in Houston and Environs

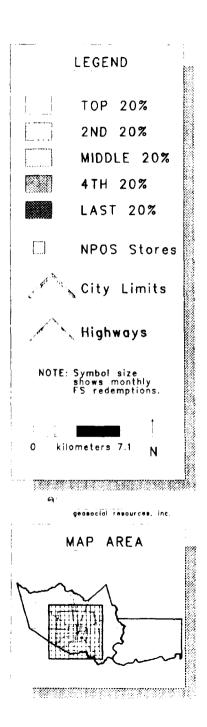


LEGEND TOP 20% 2ND 20% MIDDLE 20% 4TH 20% LAST 20% POS Stores 🐔 、City Limits Highways NOTE: Symbol size shows monthly FS redemptions. kilometers 7.1

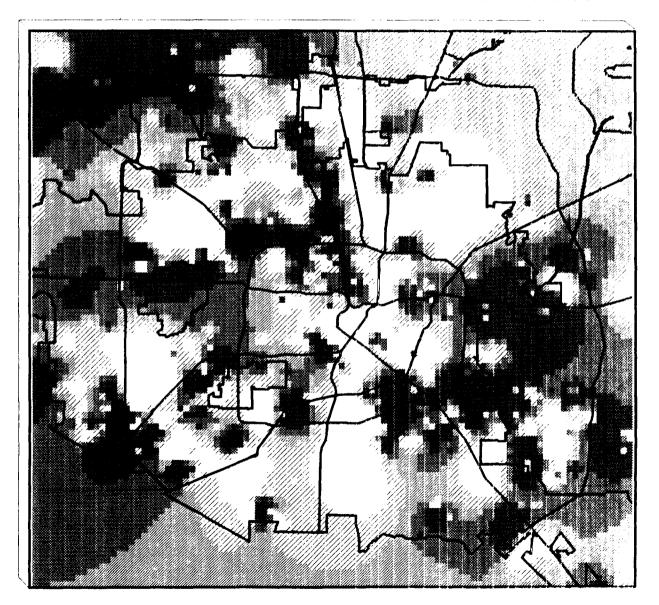


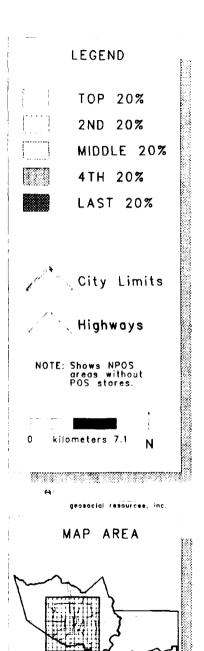
### NPOS Availability Surface Model: FSP Stores in Houston and Environs



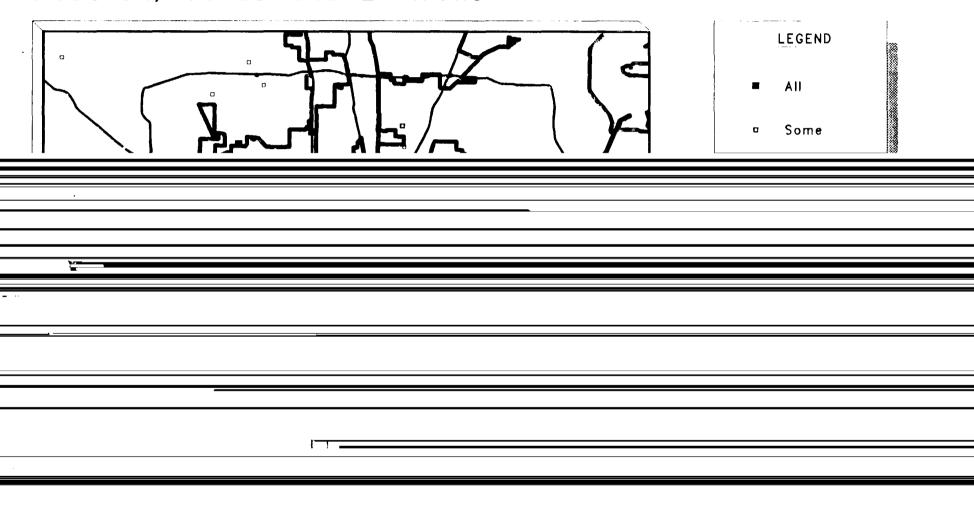


## Model of NPOS without POS: FSP Stores in Houston and Environs

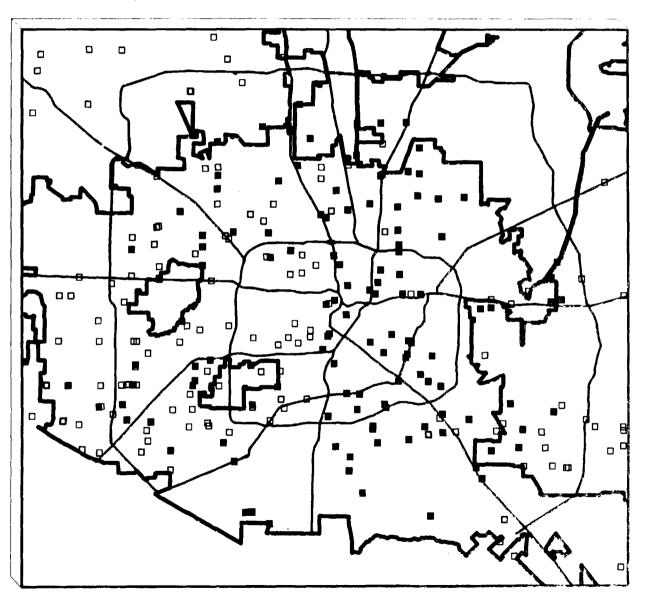


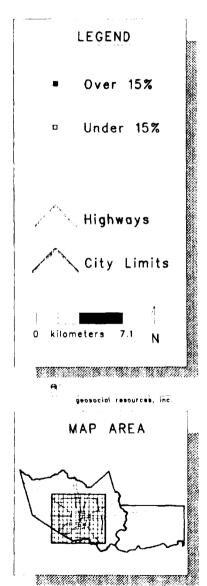


### POS Lanes in Supermarkets with 15% on FS Houston, Texas and Environs



## Supermarkets: FS as % of Food Sales Houston, Texas and Environs





#### Micro Focus Oklahoma City Study Area

The Oklahoma City study area consists of Cleveland and Oklahoma Counties, the latter containing Oklahoma City. There are several EFT networks operating in the area, most notably Transfund, ChecOKard, and SCS (Transdata). PULSE also has a minor presence in the region. Of the first three networks mentioned, none currently offers on-line debit. However, conversations with several retailers suggested that on-line debit is coming to the Oklahoma City area in the near future.

- A spokesperson for Braum's, a multi-store retailer of bakery and dairy products, mentioned being approached by Bank of Oklahoma, owner of the Transfund network, about installing a credit/debit system.
- A contact at Circle K said that the VeriFone Zon Jr XL terminals, which are credit-only, were being replaced by the Tranz 330 model, which has the capability to support online debit. The contact indicated that Circle K stores would soon be performing debit transactions.
- An official at the TransFund network stated in a recent conversation that a major food retailer in the Oklahoma City area is installing an on-line debit program to be operational in November.

Several high-volume food stamp authorized retailers in the study area were contacted concerning their plans for on-line debit and EBT.

• Albertson's, a western-US supermarket chain with seven stores in the study area, has recently completed an on-line debit feasibility study for the Oklahoma City area. However, our research indicates that the company has no immediate plans to install an on-line debit system in the area. According to a spokesperson at the company, Albertson's is seldom the first retailer to offer on-line debit in a market; their entry is determined by the competition. The contact did comment that the implementation of an EBT system in the area might force the company to rethink

its on-line debit plans and possibly deploy a system sooner. Albertson's is already participating in EBT in the Albuquerque, New Mexico area, using VeriFone Tranz 340s to process food stamp and AFDC transactions.

- Crest Discount Foods has two locations in the Oklahoma City area. These two stores redeem approximately 17 percent of all food stamps in the study area. Repeated attempts to contact company officials regarding their plans for on-line debit and EBT were unsuccessful.
- Food Lion is a nationwide chain with eight stores in the study area. The chain uses an IBM 4683 ECR system in all stores. They currently do not accept debit or credit cards in their Oklahoma City-area stores, but when they decide to move in this direction, they will install VeriFone Omni 490 terminals to integrate with the 4683 system. Food Lion would prefer to piggyback EBT on a proprietary debit/credit system rather than use state-provided stand alone terminals as is the case in their stores participating in the Maryland EBT project.
- Homeland operates 23 stores in Oklahoma and Cleveland Counties and is responsible for approximately 17 percent of food stamp redemptions in the study area. The stores use an ICL Datachecker system that is upgradable to process debit and EBT with the addition of ICL Paypath software and an IVI T3L MSR/PIN pad. A contact at the company repeated many of his colleagues' sentiments by stating that EBT may force them to push ahead with their on-line debit plans.

### Additional Research

When confronted with an absence of retailers in the study area with on-line debit, the project team undertook an additional research effort to determine the level of credit card acceptance in food retailers with large food stamp redemption rates. The rationale for this effort is that credit card acceptance is considered a precursor to on-line debit being offered in a particular area. As a sidelight, the study would determine how many retailers have terminals capable of initiating on-line debit transactions. To

provide the most relevant information in the least amount of time, the FNS database for the Oklahoma County portion of the Oklahoma City study area was sorted by food stamp redemption volume. We contacted those retailers which together comprise the top 90 percent of food stamp redemptions in Oklahoma County. Figure F.6 illustrates the results of the survey.

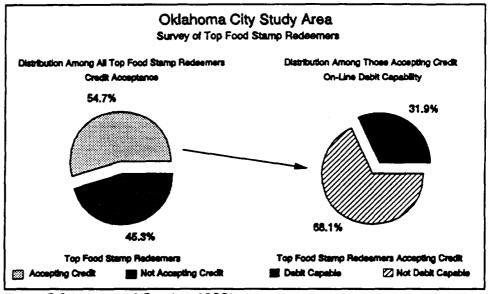


Figure F.6 (data as of October 1993)

Forty-seven of 86 (55 percent) of retailers surveyed accept credit cards for payment. Of these 47, 15 have terminals that can also be used to initiate EBT transactions. Approximately two-thirds of the terminals used for credit are VeriFone Zon Jr XL models, which are not capable of accepting debit or EBT cards. The rest are VeriFone Tranz 330s, an EBT-ready model. The results of this study indicate that extensive hardware replacement will occur with the introduction of on-line debit.

In the course of collecting data for this research effort, the project team uncovered an explanation for the prevalence of retailers accepting credit cards in Oklahoma County. A few years ago, an independent sales organization (ISO) approached many of the retailers in an effort to sell them a credit card system. The ISO claimed that the terminals supplied for credit would also be able to support debit and EBT. Convinced of this, many retailers purchased the equipment only to realize that the terminals lacked

the functionality to support the additional applications promised.

#### EBT Readiness in the Oklahoma City Study Area

With no current commercial on-line debit infrastructure, the Oklahoma City area can be considered the least "EBT ready" of the twelve sites surveyed.

Table F.3

	Level of Deployment <sup>1</sup>			
Retailer Type	Full	Part	None	Total
Α	0	0	136	0
В	0	0	83_	0
С	0	0	333	0
Total	0	0	552	0

egend

Avg. Monthly FS sales > 15% total food sales = all lanes must be deployed. All retailer types.

Table F.3 indicates that approximately one quarter (24.6 percent) of retailers in the study area will be required to deploy terminals in all of their checkout lanes.

This percentage is among the lowest of the twelve study areas. This is surprising, given the fact that in the Oklahoma City study areas, this number includes all major food retailers, who redeem the bulk of food stamps. With the introduction of on-line debit to the Oklahoma City area, the percentage of "type A" retailers without on-line debit should substantially decline.

As was previously mentioned, on-line debit will be available in the near future with a major food chain installing a system by the end of 1993. Many of the large food retailers in the area have ECR systems that are capable of handling integrated POS terminals, and it appears that soon these retailers will be adding on-line debit

B: Supermerkets: Avg. monthly FS sales < 15% total food sales ≈ one terminal for each \$11,000 in monthly FS volume up to # of lanes in store.

C: All others: Avg. monthly FS sales < 15% total food sales ⇒ one terminal for each \$8,000 in monthly FS volume up to # of lanes in store.

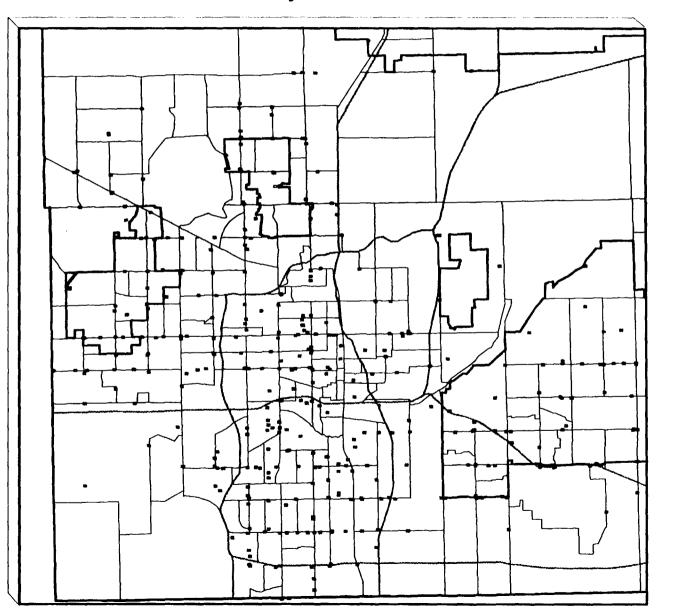
<sup>&</sup>lt;sup>1</sup> Retailers fully, partially, or not at all meeting the regulatory requirement for terminal deployment as set forth in 7 CFR 5274.12(g)(4)(ii).

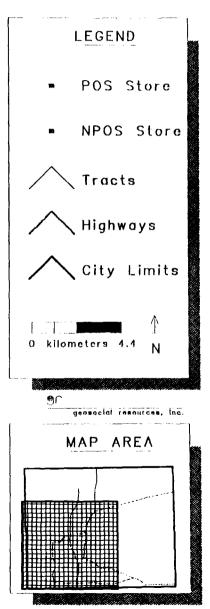
as a payment option.

#### Maps

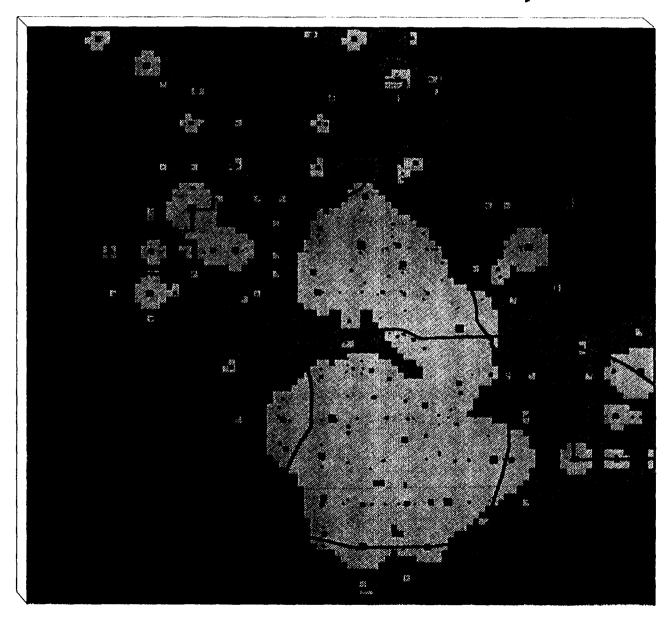
Immediately following this page are presented two color and six monochromatic maps for this study area. The content and views depicted are described generically in the introduction to Technical Report #2.

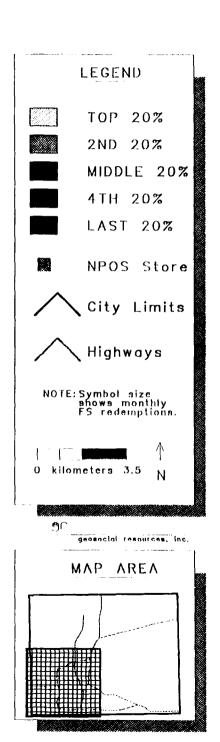
POS, Non-POS Retailers in FS Program: Oklahoma County, Oklahoma



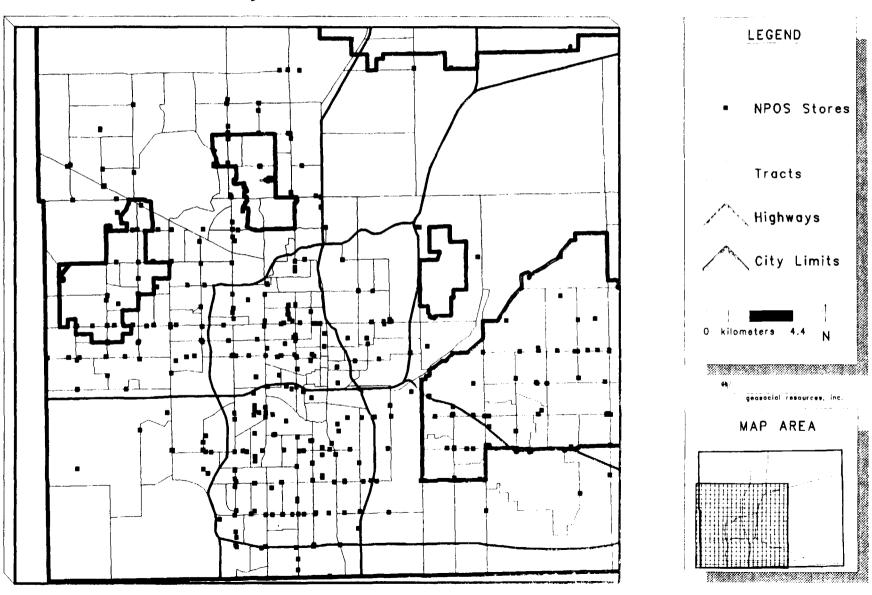


### Store Availability Model: FSP Stores in Oklahoma City Area

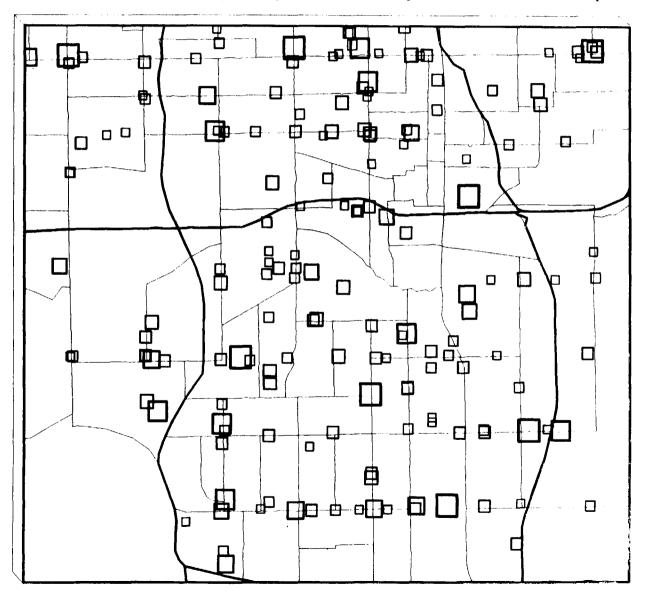


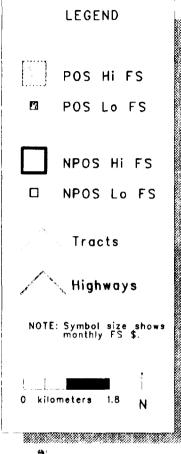


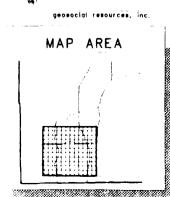
## Retailers in FS Program (Non-POS-Equipped): Oklahoma County, Oklahoma



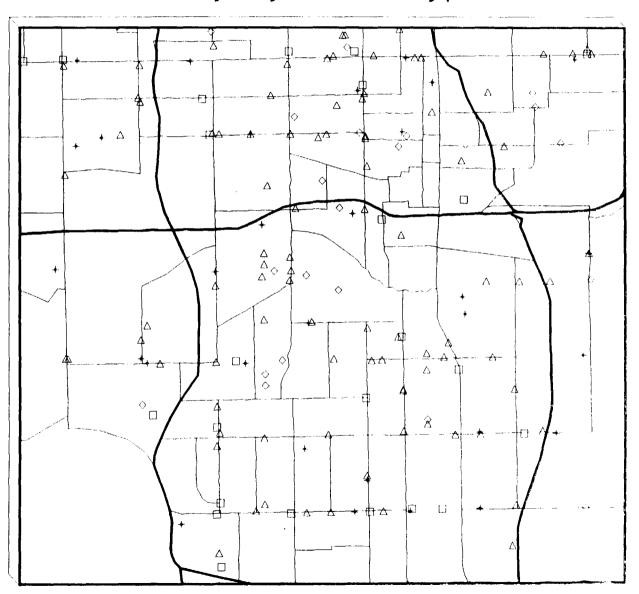
POS and Non-POS FSP Retailers
Oklahoma City by Monthly FS Redemptions

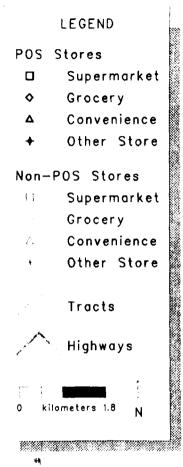


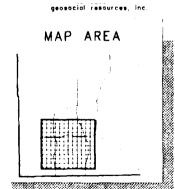




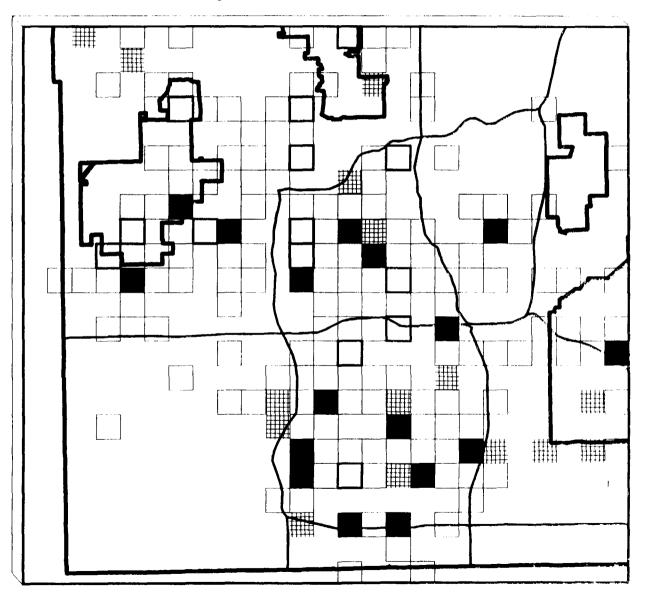
# POS and Non-POS FSP Retailers Oklahoma City by Store Type

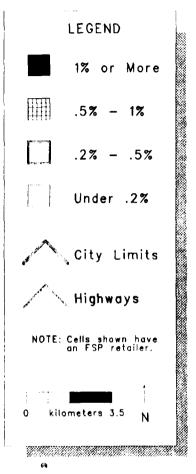


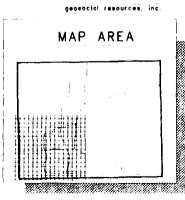




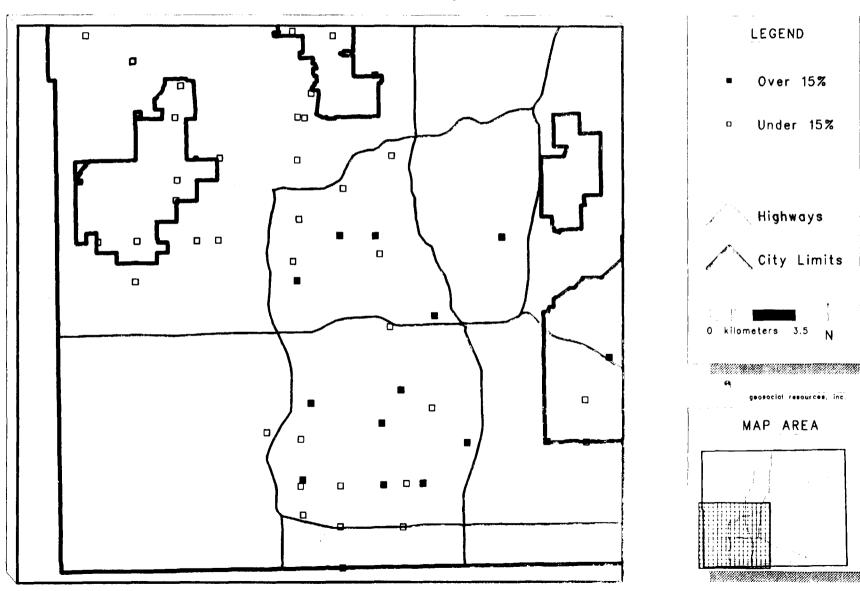
### Percentage of County FS \$: Oklahoma City Area



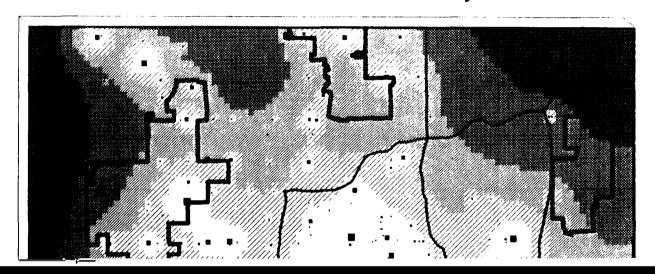


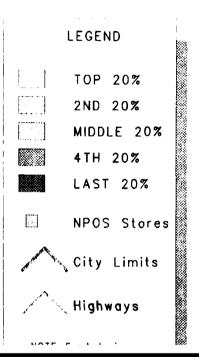


## Supermarkets: FS as % of Food Sales FSP Stores in Oklahoma City Area



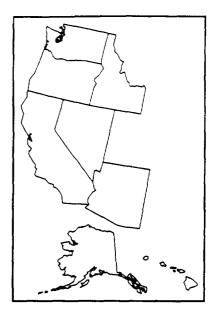
# Store Availability Surface Model: FSP Stores in Oklahoma City Area





#### G. WESTERN REGION

The FNS Western region consists of Alaska, Arizona, California, Hawaii, Idaho, Nevada, Oregon, Washington The first EFT State, and Guam. network in the region was Interlink, which was formed by five major banks in the mid-1980s. Other banks in the region soon began developing networks; such as: STAR EXPLORE, based System's California and serving the Western US; Cactus, an Automated Clearing House-based network providing offline debit services in Arizona: The Exchange, based in Bellevue, WA and serving the upper northwest; and Alaska Option in Alaska. One of the



FNS-selected study areas, the San Bernardino County, CA study area is located in the FNS Western region.

Retailers in this study area generally accept both of the two major debit cards: Interlink and Star System's EXPLORE. Fees charged by each network are listed in Table G.1.

Table G.1

Network	Fee			
Interlink	\$0.025 switch fee split between card issuer and acquirer			
EXPLORE	• \$0.05 switch fee split between card issuer and acquirer			

Arco/Paypoint is a major third party processor in the study area. Major food retailers such as Albertson's and Hughes send their transactions through this entity. Two major supermarket chains operating in the area do not have on-line debit programs. One is Vons, which has a proprietary off-line debit system; the other is Stater Brothers, which currently has no electronic payment system.

#### Research Methodology

The method of data collection for the San Bernardino study area was identical to that employed in the Houston study area. This consisted of:

- obtaining a list from EXPLORE<sup>8</sup> network of retailers accepting debit cards for purchases
- comparing this list to a dataset supplied by FNS in order to identify all food stamp authorized retailers with on-line debit
- contacting these retailers for information on their on-line debit programs.

#### Micro Focus San Bernardino County

San Bernardino County, California is located just to the west of Los Angeles and stretches to the Nevada border. The county includes the cities of Ontario and San Bernardino. There are 864 food stamp authorized retailers in this study area, 78 (approximately 10 percent) of which accept debit cards for purchases. This information is depicted in Figure G.1.

#### Common Service Models Encountered

Several common electronic payments systems are found in the San Bernardino study area. Albertson's, a supermarket chain also with stores in the Oklahoma City study area, uses ICL 1700 or 1800 controller-based ECR systems with stand beside IVI T2L terminals. The terminals are connected by way of a local area network to a controller located in each store. The controller connects by way of a leased line to Arco/Paypoint in Los Angeles. Albertson's accepts most major regional debit cards, including EXPLORE and Interlink. This scenario, common service model option 2, is similar to that used by Shop 'N Save in southeastern New Hampshire. Refer to figure A.5 for a diagram of transaction flow.

<sup>\*</sup> EXPLORE and Interlink have no unique retailer locations in the study area.

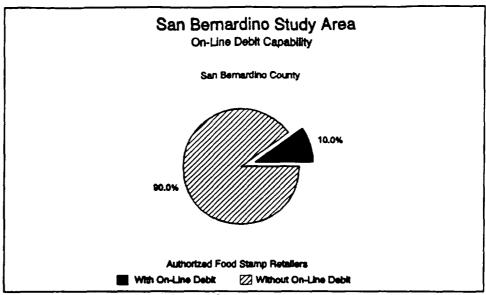


Figure G.1 (data as of October 1993)

Most Alpha Beta stores have a stand beside IVI T2L system. One store has VeriFone Omni 490s in a stand beside configuration. The intent of the company is to phase out the T2Ls and replace them with 490s. Food 4 Less, Inc. which owns Alpha Beta, also has six supermarkets in the study area. These stores have already been equipped with the VeriFone Omni 490 terminals, two in a stand beside configuration and four with the terminals integrated with the ECRs. The stores with stand beside terminals use ICL Datachecker ECRs while those with integrated systems use IBM 4683s. Transactions are routed by way of a leased line to company headquarters. The company, like Publix in the Greater Atlanta study area, switches transactions to the appropriate network using a proprietary Tandem computer.

Hughes Markets, Inc., another major food retailer in the study area with seven locations, uses IVI T3L terminals integrated with a controller-based ICL 1700 or 1800 ECR system. ARCO/Paypoint picks up on-line debit transactions and serves as the gateway to EXPLORE and Interlink. This scenario is similar to the service model used by Albertson's; the only difference is the use of integrated IVI terminals by Hughes.

Lucky Stores, Inc., has 13 supermarkets in the study area. Lucky acts as its own switch, like Publix in Atlanta and Alpha Beta.

Lucky's electronic payment system consists of IVI T2Ls integrated to a controller-based IBM 4683 cash register system. The 4683s are connected by means of a "loop" to a processor in the back room. Transactions are sent through the loop to the processor and then by way of a satellite communications system to the company switch in Dublin, CA. This switch then routes transactions to the EFT networks for approval. A contact at the company claimed that Lucky would have no trouble modifying their current system to accommodate EBT.

Ralph's Grocery Company, with five stores in the study area, has Verifone Pinstripe II terminals integrated with IBM 4683 ECRs. The ECRs are connected via a LAN to an IBM 4680 in-store processor. The 4680 then sends transactions to a Tandem computer located at company headquarters in Compton, CA. The Tandem decodes and recodes the PIN using an "encrypt box" before passing the transaction onto Wells Fargo Bank. Wells Fargo switches the transaction to either Explore or Interlink. This service model is similar to that used by DeMoulas in the southeast New Hampshire study area. Refer to figure A.4 for a diagram of transaction routing.

Smith's Food and Drug is the only major food retailer in the study area using the NCR 2127 ECR system with the integrated 4430 MSR/PIN pad. On-line debit transactions are sent from the store level to ARCO/Paypoint, which relays the transactions to the networks.

Vons Companies, Inc. was contacted to determine what modifications would need to be made to their off-line debit system to accommodate EBT. Vons currently uses ICL ECRs which are linked to a back room controller running a proprietary "StoreTec/Superstore" software package. The ACH debit system uses Atalla MSR/PIN pads connected to an IBM Series/1 controller. The company plans to upgrade to the new Atalla ACTT MSR/PIN pads in the near future. A company official stated that the process of modifying the system for EBT will require software changes to accommodate printing of the balance; DES encryption of the PIN at the PIN pad already occurs. EBT transactions would be sent from the store level to a host located at headquarters where they would be picked up by the EBT processor or concentrator bank.

#### EBT Readiness in the San Bernardino Study Area

In the San Bernardino study area, all major food retailers with the exception of Vons and Stater Brothers have on-line debit capability. In all, ten percent of all food stamp authorized retailers in the study area accept debit cards for purchases. Figure G.2 shows the percentage of study area food stamp redemptions accounted for by these retailers.

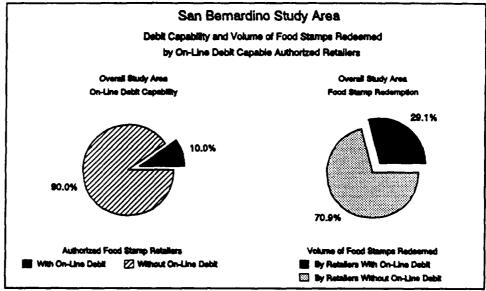


Figure G.2

Table G.2 breaks down the food stamp authorized retailers by level of terminal deployment and volume of food stamp redemption.

Table G.2

Retailer Type	Level of Deployment <sup>1</sup>			
	Full	Part	None	Total
Α	2	3	258	263
В	51	0	79	130
С	22	0	449	471
Total	75	3	786	864

Legend A:

Of interest is the small number of retailers with on-line debit which redeem more than 15 percent of their total food sales in food stamps. This illustrates that food stamp redemptions of the larger supermarkets (most of which are equipped for on-line debit) comprise a smaller share of total food sales than in other study areas. This could be an indication of the income level of residents in the study area but more likely means that retailers with higher levels of food stamp redemption tend not to have on-line debit. In fact, 32.8 percent, a fairly high number, of retailers without online debit redeem more than 15 percent of their total food sales in food stamps.

As discussed above, Vons has the hardware in place to process EBT transactions; Stater Brothers is currently considering an online debit system. The vast majority of the remaining food stamp authorized retailers have one or two registers. This implies that the majority of multi-lane retailers have on-line debit systems, which is important when the costs of equipping non-debit capable retailers are considered.

Avg. Monthly FS sales > 15% total food sales ⇒ all lanes must be deployed. All retailer types.

B: Supermarkets: Avg. monthly FS sales < 15% total food sales ⇒ one terminal for each \$11,000 in monthly FS volume up to # of lanes in store.

C: All others: Avg. monthly FS sales < 15% total food sales ⇒ one terminal for each \$8,000 in monthly FS volume up to # of lanes in store.</p>

<sup>&</sup>lt;sup>1</sup> Retailers fully, partially, or not at all meeting the regulatory requirement for terminal deployment as set forth in 7 CFR \$274.12(g)(4)(ii).

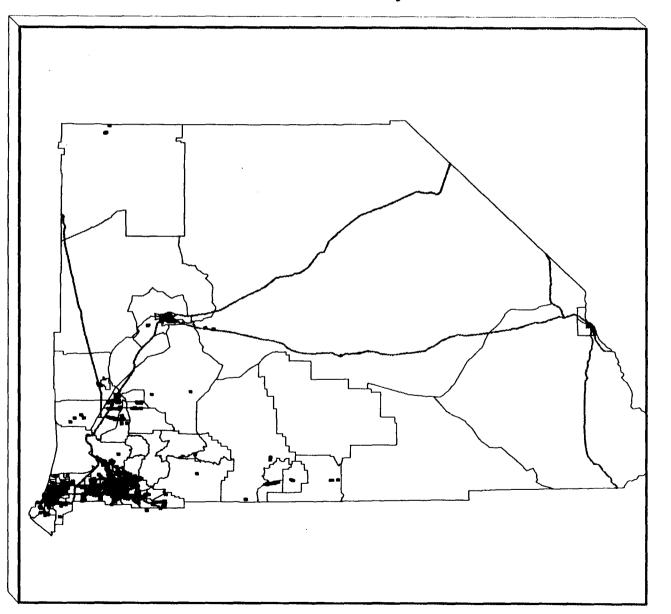
### Changes Since Snapshot

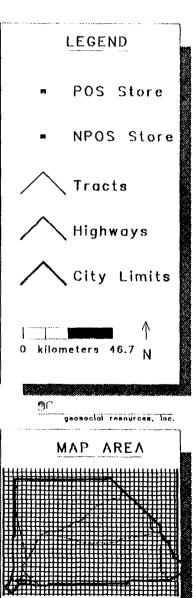
Since the FNS database was released Lucky Stores, Inc. has closed one store, #512, formerly at Highway 18 in Apple Valley. Smith's Food and Drug plans on opening a new store in San Bernardino County.

#### Maps

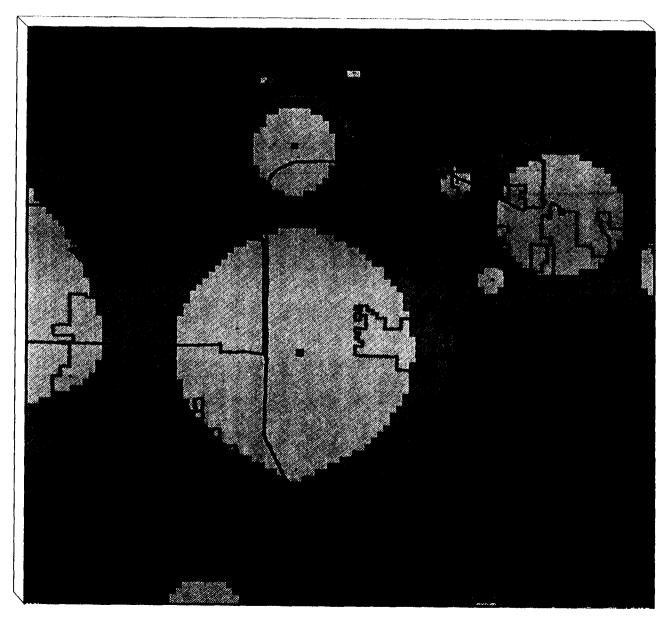
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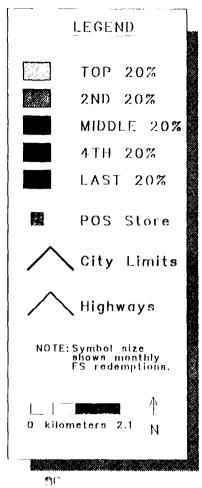
POS, Non-POS Retailers in FS Program: San Bernardino County, CA

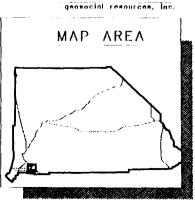




# POS Availability Model: FSP Stores in San Bernardino

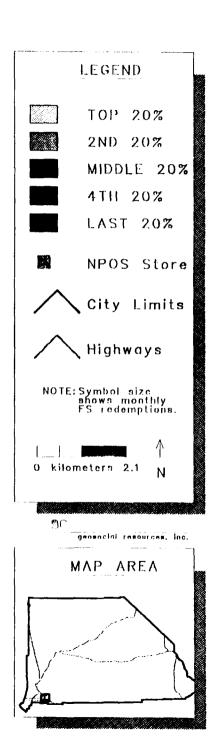




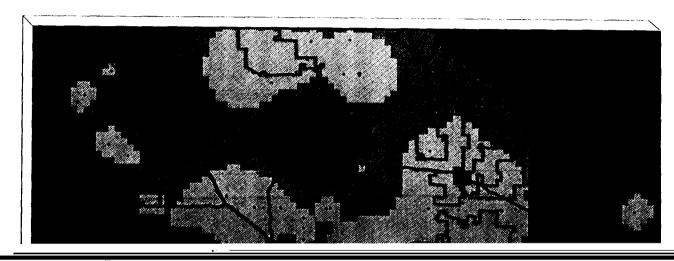


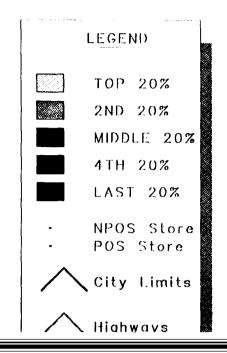
# NPOS Availability Model: FSP Stores in San Bernardino



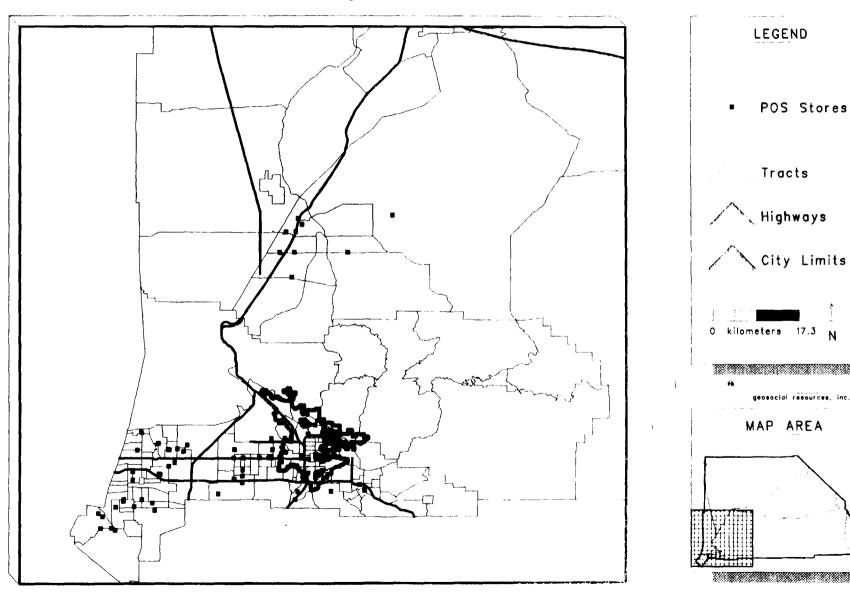


# Model of NPOS without POS: FSP Stores in San Bernardino

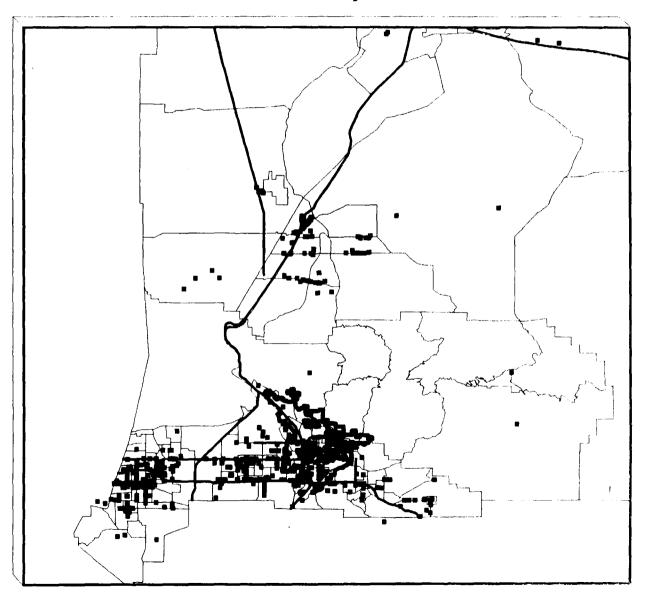


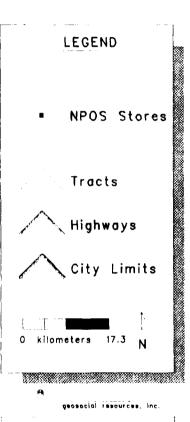


### POS-Equipped Retailers in FS Program: San Bernardino County, CA



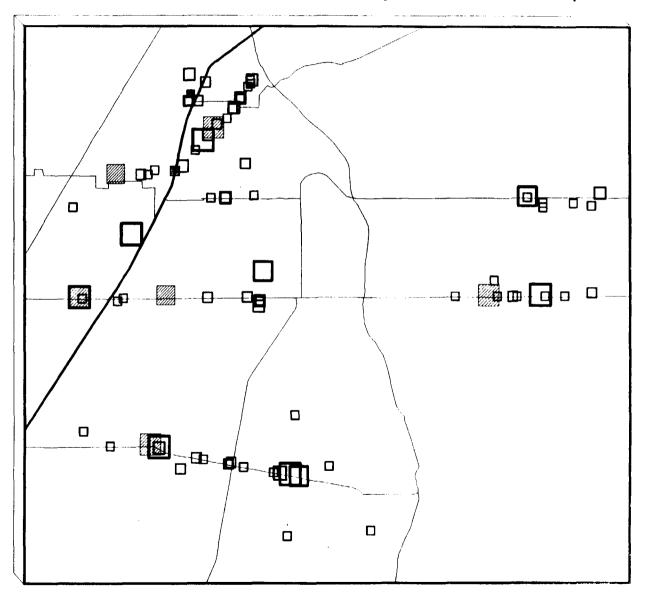
### Non-POS-Equipped Retailers in FS Program: San Bernardino County, CA

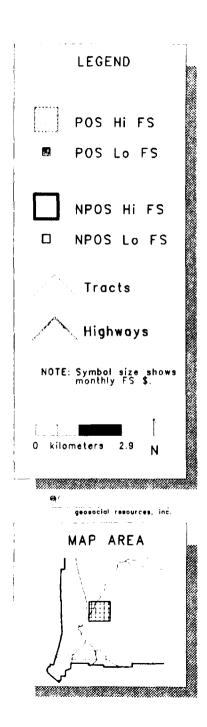




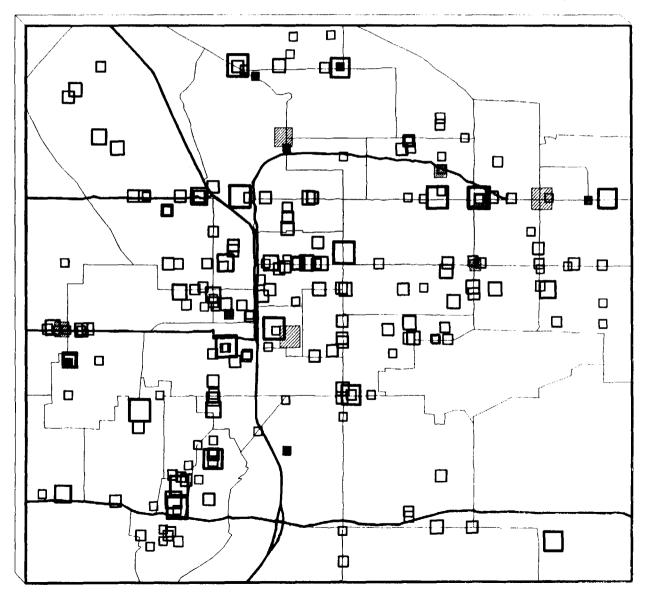


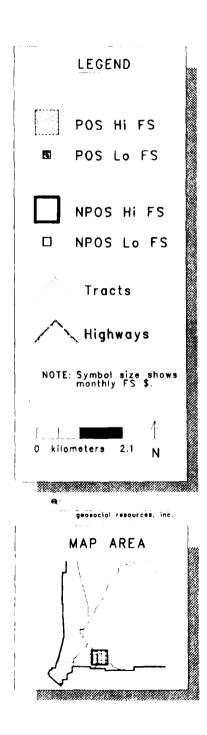
POS and Non-POS FSP Retailers
Victorville Area, Monthly FS Redemptions



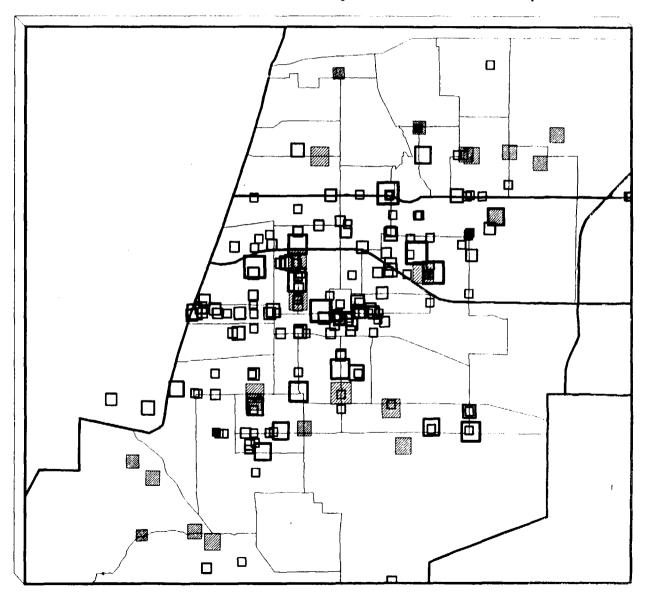


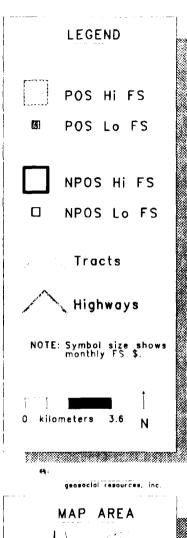
POS and Non-POS FSP Retailers
San Bernardino, Monthly FS Redemptions

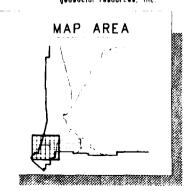




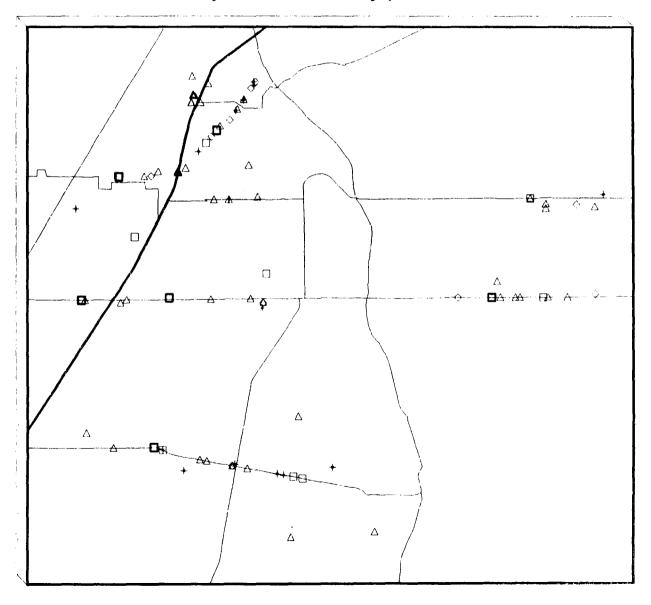
## POS and Non-POS FSP Retailers Ontario Area, Monthly FS Redemptions

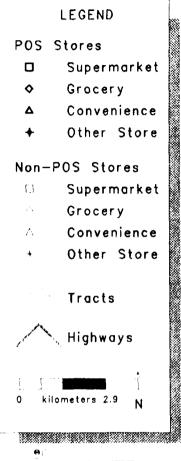


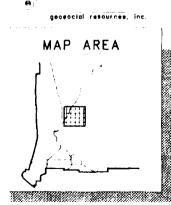




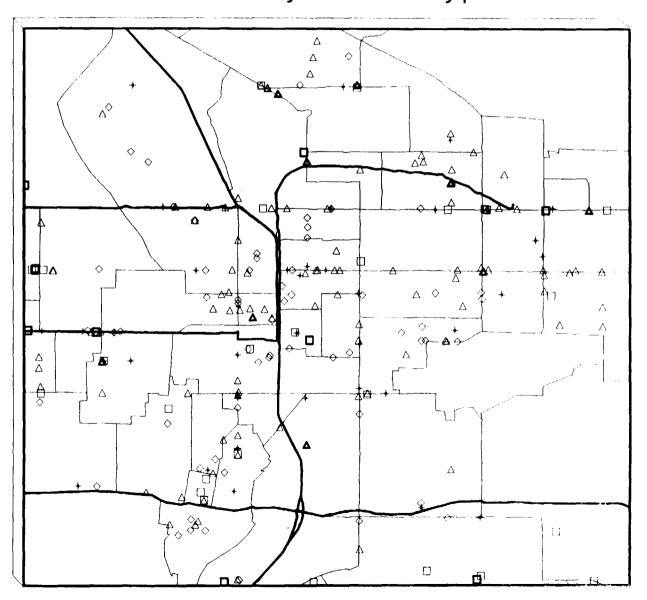
# POS and Non-POS FSP Retailers Victorville by Store Type

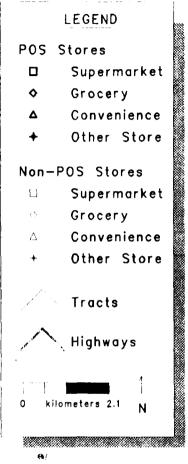


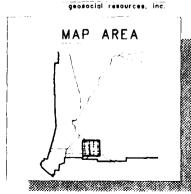




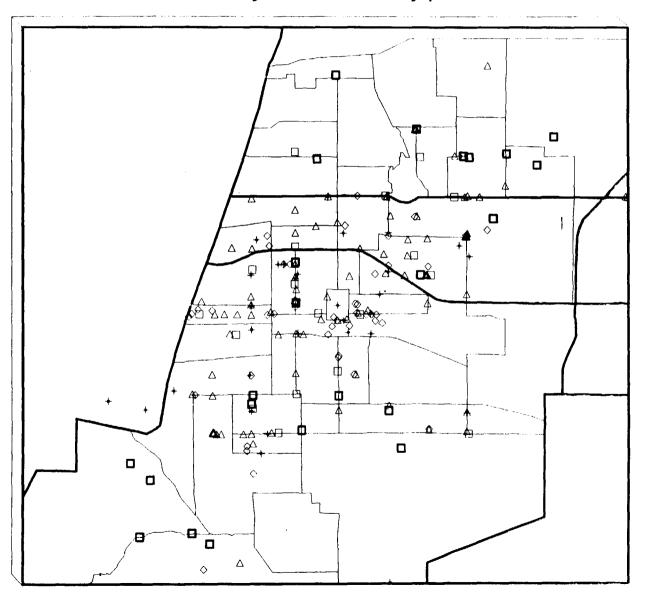
# POS and Non-POS FSP Retailers San Bernardino by Store Type

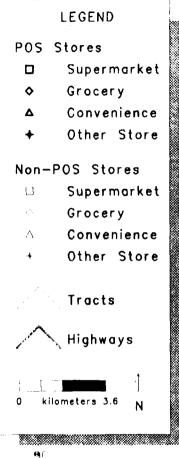


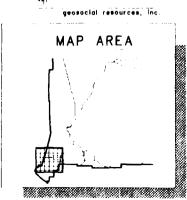




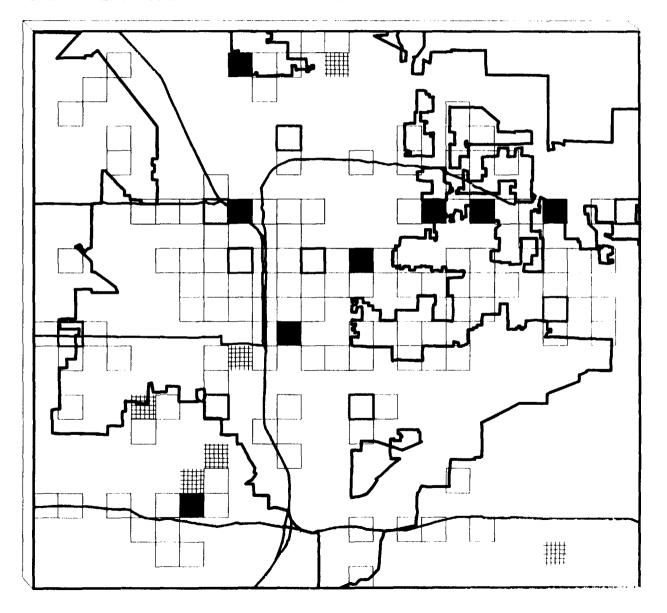
## POS and Non-POS FSP Retailers Ontario Area by Store Type







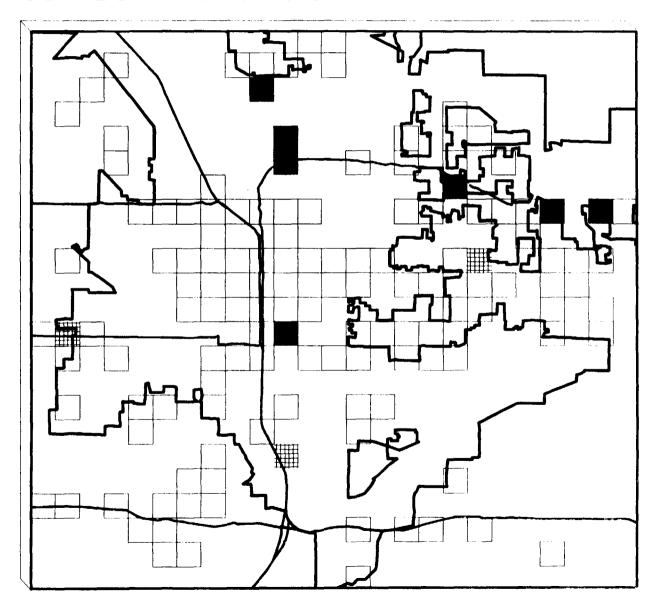
### Percentage of County FS \$: San Bernardino Area

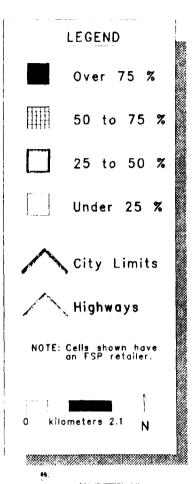


LEGEND 1% or More .5% - 1% .2% - .5% Under .2% City Limits 🔼 Highways NOTE: Cells shown have an FSP retailer. 0 kilometers 2.1



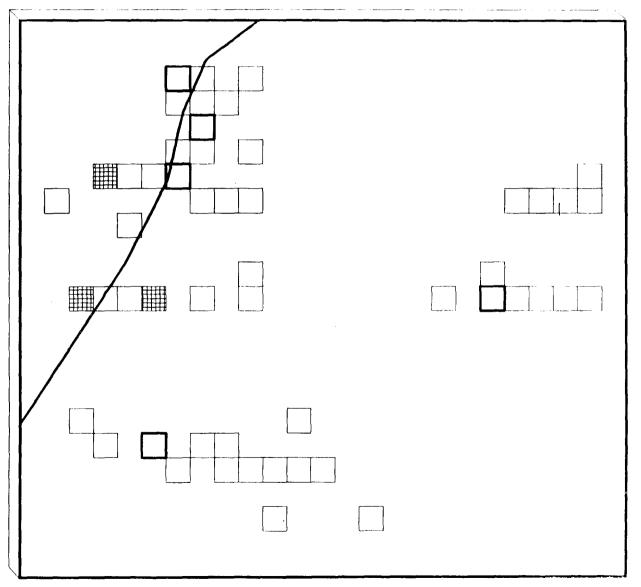
POS FS \$ as % Total FS \$: San Bernardino Area

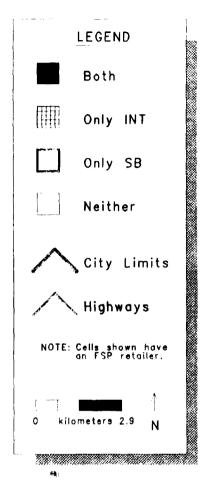






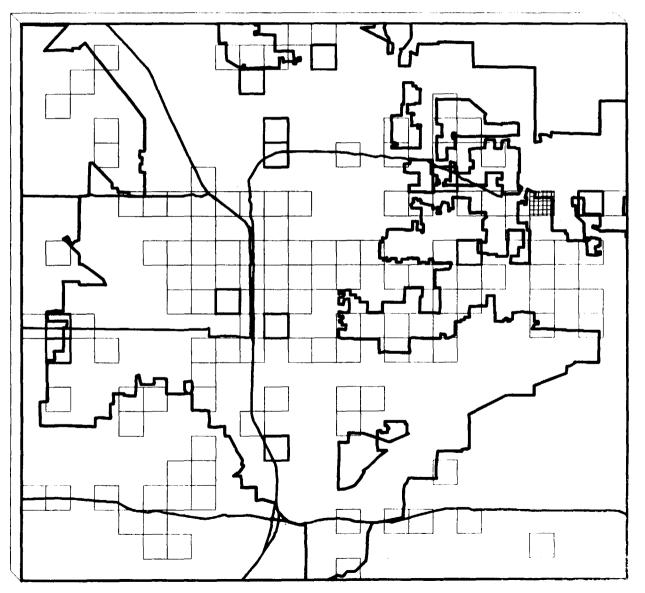
# Integrated and Stand-Beside POS: Victorville Area

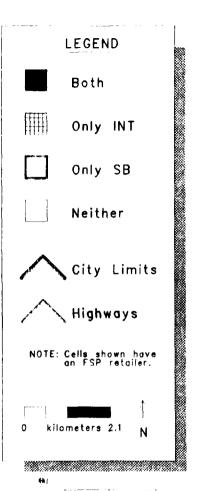






Integrated and Stand-Beside POS: San Bernardino Area

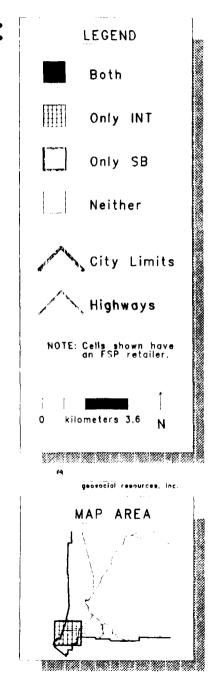




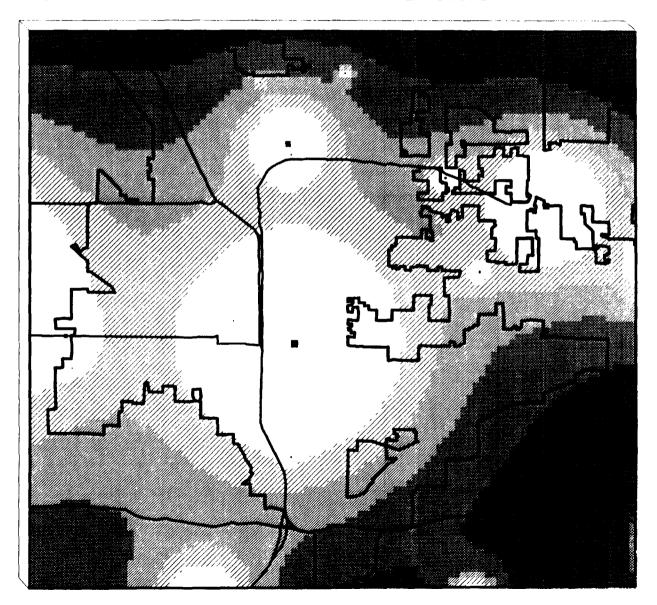


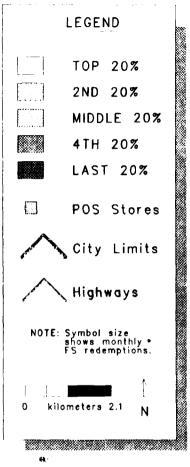
Integrated and Stand-Beside POS:
Ontario Area





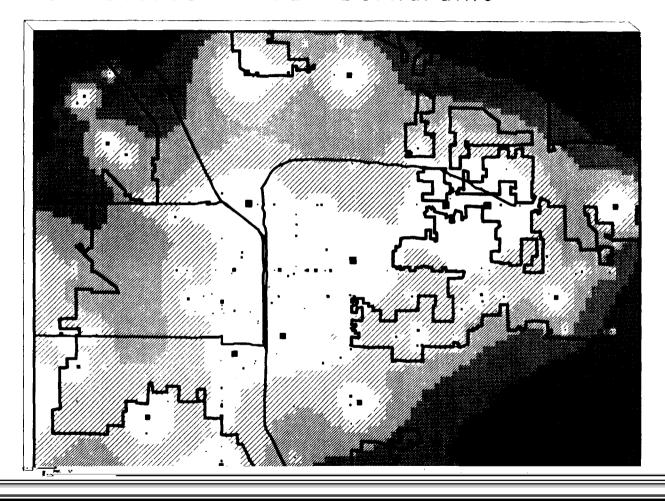
### POS Availability Surface Model: FSP Stores in San Bernardino

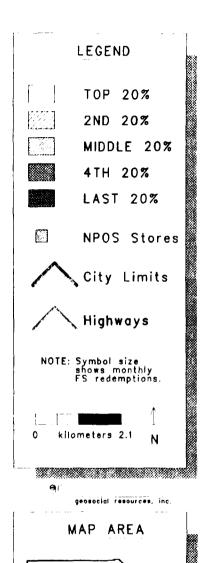




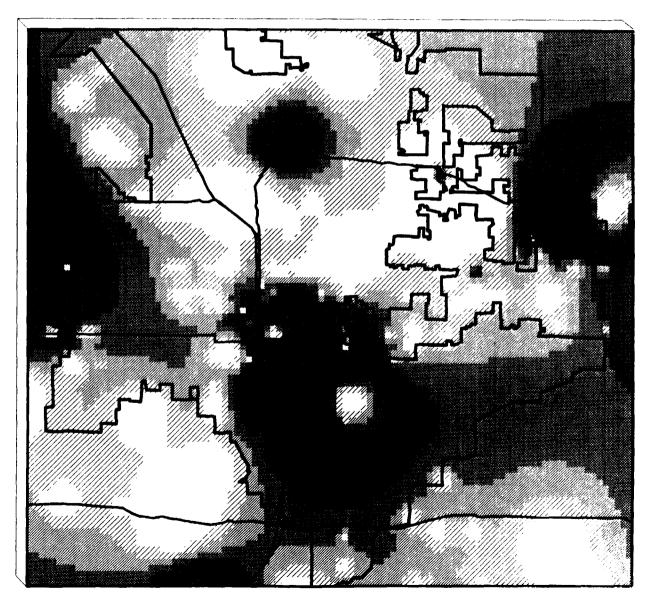


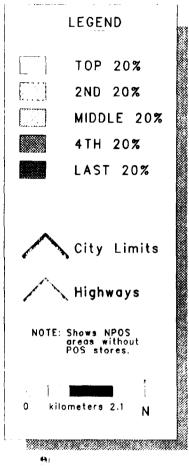
## NPOS Availability Surface Model: FSP Stores in San Bernardino





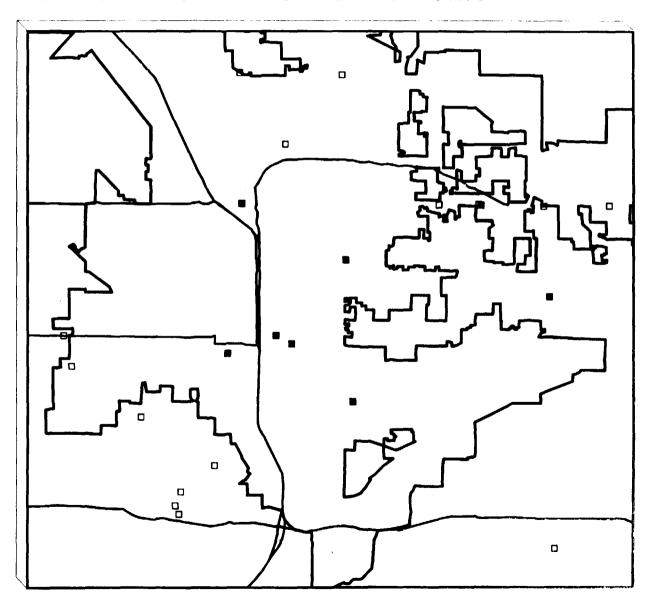
# Model of NPOS without POS: FSP Stores in San Bernardino

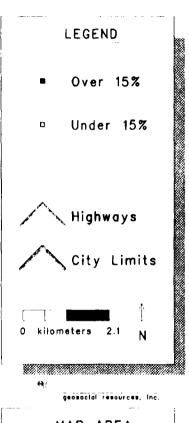






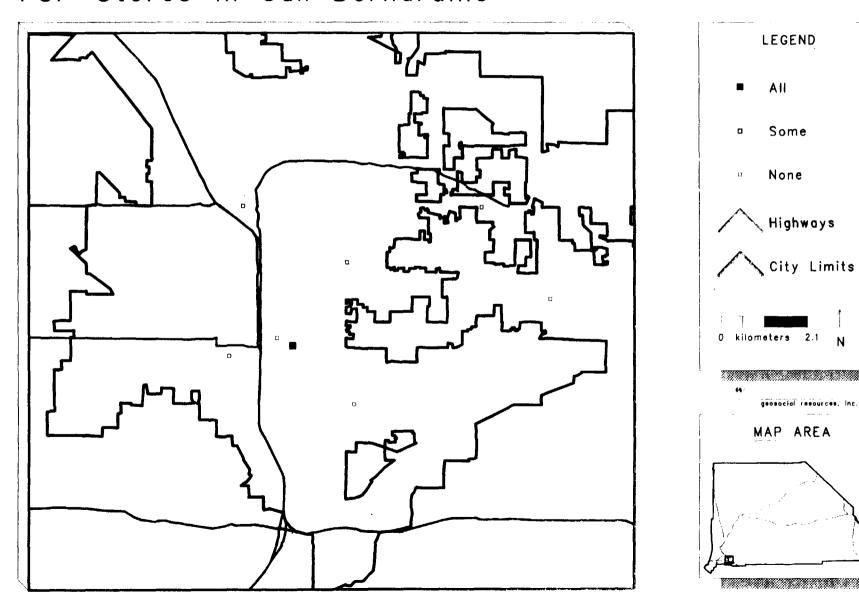
# Supermarkets: FS as % of Food Sales FSP Stores in San Bernardino







POS Lanes in Supermarkets with 15% on FS FSP Stores in San Bernardino



# **BIBLIOGRAPHY**

#### Introduction

Presented in this appendix are the results of a literature review, conducted throughout the course of the task order.

The results are presented in the form of an annotated bibliography of resources relating to the EFT commercial infrastructures and (where specified) its implications for EBT. In compiling this bibliography, project staff reviewed EFT literature including trade journals and publications from the commercial banking industry, electronic funds organizations, and various trade associations.

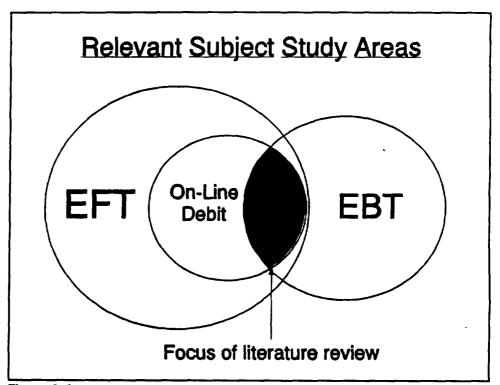


Figure A.1

As depicted in Figure A.1, our literature review encompasses the broad subject areas of EFT and EBT. To document resources most pertinent to this study, we focused our review on the intersection of on-line debit (a subset of EFT) and EBT. While the coverage of several resources extends to subject areas beyond this intersection, we have emphasized those resources that most

directly address the EFT infrastructure and its implications for EBT.

# **Journals and Newsletters**

The following journals and newsletters publish articles relating to on-line debit and the electronic funds transfer (EFT) industry.

American Banker. New York: Thomson Financial Information.

Daily newspaper covering all aspects of the banking industry. The Credit/Debit/ATM section in each edition follows trends in EFT. Yearly subscription rate: \$712.

<u>Automated Payments Update</u>. Herndon, VA: National Automated Clearinghouse Association.

Contains news of the ACH network, sometimes includes EBT-related articles. Published monthly, annual subscription price: \$150.

Bank Automation News. Potomac, MD: Phillips Business Information.

Covers issues in bank automation including: integration, marketing, and automation strategies. Published bi-weekly. Annual subscription price: \$445.

Bank Network News. Chicago: Faulkner & Gray.

"The leading source of news and analysis on the EFT industry". One year, bi-weekly subscription: \$395.

Bank Operations Report. Boston: Warren, Gorham, & Lamont.

Bank Systems and Technology. New York: Gralla Publications.

Deals with technology as it relates to the banking industry. Published monthly. One-year subscription: \$65.

- Bank Technology News. New York: Faulkner & Gray.

  "Reporting product innovation & technology solutions for decision makers in banking". Published ten times per year. Annual subscription price: \$50.
- Bank Technology Report. Boston: Warren, Gorham, & Lamont, Inc.

Published monthly. Yearly subscription cost: \$155. Follows trends in banking technology, including ATM & POS terminal deployments.

- <u>Banking Technology</u>. London: Banking Technology, Ltd. Covers banking-related technology issues.
- <u>Card Fax</u>. Chicago: Faulkner & Gray, Inc.

  Covers developments in the credit and debit card industries. Fifty-two weekly issues: \$695.
- Card News: The Executive Report on the Transaction Card Marketplace. Potomac, MD: Phillips Business Information.

  Reports current news and trends in the transaction card industry. One-year, biweekly subscription price: \$445.
- <u>EFT Report: Newsletter of Electronic Funds Transfer</u>. Potomac, MD: Phillips Business Information.

Covers issues in the areas of electronic funds transfer and POS debit. One-year, biweekly subscription price: \$445.

**EFT Today.** Alexandria, VA: Electronic Funds Transfer Association.

Covers ACH, ATM, EFT, EDI, Credit/Debit cards and other automated financial services developments. Ceased publishing in 1989.

Funds Transfer Report. Westport, CT: Bankers Research Inc.
Covers issues relating to credit cards and funds
transfer. \$324 for twelve monthly issues.

<u>Paperless Payments</u>. Herndon, VA: Electronic Funds Transfer Association.

Published six times a year. Annual subscription rate: \$95. Newsletter covers EFT-related topics.

<u>Payment Systems Newsletter</u>. West Tampa, FL: Payment Systems, Inc.

Newsletter was incorporated into Bank Network News in October 1990. Covered developments in the credit/debit card industry.

<u>Personal Identification News</u>. Washington, DC: Warfel & Miller, Inc.

A portion of this newsletter covers developments in the smart card industry. Ten issues per year, one year subscription price: \$345.

POS News. Chicago: Faulkner & Gray.

Published monthly. Annual subscription: \$295. Follows the latest developments in the retail electronic payments industry.

United States Banker. New York: USB Corp.

Magazine covering developments in all areas of banking. Annual (twelve issues) subscription price: \$48.

# **Books and Booklets**

The following section contains references to books and booklets that are in whole or in part dedicated to EFT.

Bank Network News EFT Network Data Book. Chicago: Faulkner & Gray, 1992.

Twenty-four page booklet contains statistics from the EFT industry, as well as lists of the top EFT networks, the top debit card issuers, and the leading ATM deployers.

<u>The Business Case for Retail POS</u>. Herndon, VA: Electronic Funds Transfer Association.

Three-volume report discusses all major aspects of POS programs. This analysis is backed by case studies of five retailers.

Card Industry Directory. Chicago: Faulkner & Gray, Inc.
Contains listings of the 300 largest debit card issuers, the 300 largest ATM owners, as well as general information on the industry and its future growth. 600 pages, \$345.

Enger, Floyd E. III. <u>The Electronic Future of Banking</u>. Naperville, IL: Financial Sourcebooks, 1991.

Book examines the latest trends in electronic banking (ATMs, on-line debit, Automated Clearing Houses, home banking) and places them in the context of the current boom in consumer electronics. Includes a section on EBT: its evolution (through pilot projects), issues involved in transferring to an EBT system, and the future of EBT.

<u>EBT in the United States</u>. Herndon, VA: Electronic Funds Transfer Association.

130-page report discusses the major issues of EBT: optional v. mandatory participation, training of EBT participants, Reg E, and equipping checkout lanes for EBT, among others. Price: \$65.

<u>EFT/POS</u> in the <u>Supermarket Environment</u>. Herndon, VA: Electronic Funds Transfer Association.

This 65-page report looks at the major forms of payment available to supermarkets. These include POS debit, credit, and checks, as well as off-line debit and scrip. Case studies of individual retailers help illustrate the topics covered.

Executive Guide to market Research Reports & Information Resources Potomac, MD: Phillips Business Information, 1993
Guide to Phillips Business Information publications in many areas including: Data Communications, Public Networks, and Bank Automation and Credit Cards. Available through the publication is The 1994 Security Industry Buyers Guide.

Giesen, Lauri. <u>Debit Card 2000: EFT Networks and Debit Card Issuers Predict Their Future</u>. Chicago: Faulkner & Gray, 1993.

52-page publication discusses the current state and the future of debit card use. Specific issues covered include: projected growth in the number of debit cards, ATM transaction and terminal deployment predictions, network involvement with EBT, reorganization of networks, evolution of home banking and payment services, and the future of regional and national on and off-line POS.

The Impacts of the State-Initiated EBT Demonstrations on the Food Stamp Program. Cambridge, MA: Abt Associates, June 1993.

Report written for the Food and Nutrition Service analyzes the state-initiated EBT demonstrations in Arizona, New Mexico, Minnesota, and Washington state. Issues covered include the impact of the system on costs (administrative as well as benefit loss and diversion), retailers, recipients, and financial institutions. The report also looks at the feasibility of continuing and/or expanding operations.

The 1993 Retail Banking Sourcebook: The Executive Guide to Technologies, Delivery Systems and Services. Potomac, MD: Phillips Business Information, Inc.

Contains listings of retailers of POS and ATM equipment, applications and system software, and plastic cards as well as regional and national EFT and POS networks.

Payment Systems: Strategic Choices for the Future. Tokyo, Japan: Hitachi Research Institute, 1993.

Analysis of the current state and future of electronic payment systems on an international level. Includes a section on European and American EFT/POS systems.

POS News POS Market Data Book. Chicago: Faulkner & Gray, 1993.

Twenty-four page booklet contains statistics on the POS debit industry, lists the top POS debit networks,

the top merchants doing on-line debit, leading banks with on-line debit programs, as well as the frontrunners in ACH debit, EDC processing, health care POS, and EBT.

The U.S. Market for EFT/POS Debit Terminals. New York: Frost and Sullivan Market Intelligence, 1993.

Report gives an overview of hardware (terminals), the EFT system (networks, processors, and banks), a market analysis, and a competitive analysis of the industry. Report price: \$2,900.

# Specific References to the Use of the Current POS Terminal Infrastructure to Facilitate the Implementation of EBT

Cooke, C. "Frontrunners in EBT head into the home stretch". <u>Bank Technology News</u> 1.5 (November/December 1992).

Article discusses EBT-related technology issues, such as account ownership (recipient or government), use of smart cards in EBT systems, and "piggybacking" EBT on the current POS infrastructure.

"The Costs of EBT". Funds Transfer Report. August 1992: 3-5.
Article looks at the costs of EBT from the state and federal governments' perspective, concluding that costs will be reduced by adding other benefit programs to the system, and "piggybacking" on the present POS terminal infrastructure.

A Current Evaluation of EBT: An S & A Special Report. Atlanta, GA: Speer & Associates, January 1993.

The report, by Speer and Associates, a consulting firm working for clients in the banking industry, concludes that significant savings could be achieved by the electronic transfer of benefits to recipients. The federal government could save approximately \$100 million in check issuance fees by employing such a system. Further savings can be achieved by using the same system to distribute all state and federally-administered benefits.

"Electronic Delivery of Public Assistance Benefits: Automating the Payments System". <u>Bank Operations Report</u> December 1988: 6-7.

Article discusses the benefits of EBT as well as the technological issues involved, such as on-line vs. off-line EBT, a stand alone v. piggybacked system, and the role of banks in EBT and EBT security issues.

"Federal Study Will Size Up States' EBT Readiness". <u>POS News</u> 9.9 (January 1993):3.

Article outlines study currently being conducted by Price Waterhouse for the Food and Nutrition Service to examine the implications of the current point-of-sale terminal infrastructure to EBT.

lacobuzio, T. "Is EBT the Statists' Trojan Horse?" Bank Systems & Technology 28.5 (May 1991):116.

Article addresses banking community's fears regarding EBT, in particular the government using the existing POS infrastructure without adequately compensating the banks and the issue of who will pay transaction costs.

"The Prospects and Perils of Electronic Benefit Transfer". <u>Funds</u> <u>Transfer Report</u> November 1991: 2-6.

Contains coverage of one-day ABA seminar held in Washington, DC in October 1991. Among other things, speakers emphasized that the governments must use private sector firms- banks, thrifts, networks, and hardware & software vendors in order to make EBT viable.

"S&A Study Explores EBT Market, Finds States Have Much to Gain". Financial Services Report 31 March 1993:3-5.

Article discusses report by Atlanta-based Speer & Associates which stresses the need to focus EBT system development in areas with a mature POS terminal infrastructure.

# **LIST OF CONTACTS**

#### **EFT Networks**

Annie

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San Francisco, CA 94128

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Manchester, NH 03101

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Money Center 24 P.O. Box 1715 Peoria, IL 61656 Contact: Linda Bracken

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1395 East Dublin-Granville Rd
Suite 350
Columbus, OH 43229
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MOST Internet, Inc. 11800 Sunrise Valley Drive Suite 200 Reston, VA 22091 Contact: Richard G. Lyons, Jr.

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The Owl
(Now part of EPS)
Central Trust Co.
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Fifth & Main St.
Cincinnati, OH 45202
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PULSE 600 Travis Suite 942 Houston, TX 77002 Contact: Cindy Ballard Shazam
Iowa Transfer System, Inc.
6700 Pioneer Parkway
Johnston, Iowa 50131
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SCS (Transdata)
120 North Robinson
P.O. Box 1010
Oklahoma City, OK 73101
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Transfund P.O. Box 2300 Tulsa, OK 74193 Contact: Bob Snyder

24-Hour Teller Rodney Square North Wilmington, DE 19890 Contact: Richard Wilhide

Yankee 24 6 Fairfield Blvd. Wallingford, CT 06942 Contact: Dick Symington

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First NH Bank 1000 Elm Street Manchester, NH 03108 Contacts: Debbie Lagana, Bob Saoud Wilmington Trust Company Rodney Square North 1100 North Market Street Wilmington, DE 19890-0001 Contact: Carol Townsend

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BUYPASS the System 360 Interstate North Parkway Suite 400 Atlanta, GA 30339 Contact: Rodney Bell

Concord/EFS, Inc. 2525 Horizon Lake Drive, Suite 120 Memphis, TN 38133 Contact: Collette Camerano

Deluxe Data Systems 8901 N. Kildeer Court Brown Deer, WI 53209 Contact: Jane Coppolino

Mellon Bank
One Mellon Bank Center
Room 151-1020
Pittsburgh, PA 15258-0001
Contact: Nancie Lynch

#### Retailers

A&P Tea Company (National Headquarters) 2 Paragon Drive Montvale, NJ 07645 Contact: Francis Clark A&P Tea Company (Atlanta Division) 1200 White Street SW Atlanta, GA 30310 Contact: Bob Sharber

Acme Markets
75 Valley Stream Parkway
Malvern, PA 19355-0733
Contact: Al Lewis

Albertson's Incorporated 250 Parkcenter Boulevard Boise, ID 83706 Contact: Art Powell

Aldi Foods 1200 North Kirk Road Batavia, IL 60510 Contact: Scott Cornogee

Alpha Beta See: Food 4 Less

BILO Incorporated
Devonshire Road
Mauldin, SC 29662
Contact: Judy Alexander

W.H. Braum, Inc. 3000 NE 63rd Oklahoma City, OK 73125

Bruno's Inc. P.O. Box 2486 Birmingham, AL 35201 Contact: Jim Boone

Butera Foods
1 Clock Tower Plaza
Elgin, IL 60120
Contact: Joseph Butera

Casey's General Stores, Inc. 1 Convenience Blvd. Ankeny, IA 50021-8045

Circle K Corporation 1601 North 7th Street Phoenix, AZ 85006 Contact: Stephanie LaStella

Convenient Food Mart 1100 Mentor Avenue Painesville, OH 44077 Contact: John Becker

Crest Discount Foods
249 North Douglas
Midwest City, OK 73130
Contact: Nick Harroz

Cub Foods P.O. Box 9 127 S. Water Street Stillwater, MN 55082 Contact: Mark Barritt

Cub Foods (Atlanta franchise operation) 420 Thornton Road Lithia Springs, GA 30057 Contact: Billy Grogen

Cumberland Farms
777 Dedham Street
Canton, MA 02021
Contact: Scott Winslow

Dahl's Foods 4343 Merle Hay Road Des Moines, IA 50310-1411 Contact: Jerry Jones Dairy Mart 1 Vision Drive Enfield, CT 06082 Contact: Jeff DeLiesde

Demoulas/Market Basket 875 East Street Tewksbury, MA 01876 Contact: Roland Kelly

Dierbergs Markets P.O. Box 1070 Chesterfield, MO 63006 Contact: Steve Radcliff

Dominick's Finer Foods, Inc. 333 Northwest Avenue Northlake, IL 60164-1696 Contact: Scott Hiss

Eagle Foods Center
Route 67 and Knoxville Road
Milan, IL 61264
Contact: Bob McNamer

Fareway Stores, Inc. 2600 8th Street Boone, IA 50036 Contact: Vern Houseman

Fiesta Mart, Inc. 5235 Katy Freeway Houston, TX 77007 Contact: Jim Cronan

FINAST 17000 Rockside Road Maple Heights, OH 44137 Contact: Ron Sidoti Fleming Foods
P.O. Box 26647
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Food 4 Less, Inc.
777 South Harbor Boulevard
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Food Lion P.O. 1330 Salisbury, NC 28145-1330 Contact: Jeff Waldo

Food Saver Scrivner Inc. 5701 North Shartel Oklahoma City, OK 73118 Contact: Ray Grabner

Gerland's Food Fair 3131 Pawnee Houston, TX 77054-3302 Contact: Kathy Swiedel

Git-N-Go Convenience Stores, Inc. 2716 Indianola Avenue Des Moines, IA 50315 Contact: Pete Klindt

Grocer's Supply 3131 East Holcombe Blvd. Houston, TX 77021 Contact: Greg McCann

Harris Teeter P.O. Box 33129 Charlotte, NC 28233 Contact: Roger Helms Heinen's Supermarkets 20601 Aurora Road Warrensville Heights, OH 44146 Contact: Tim McLaughlin

Homeland, Inc. 400 NE 36th Oklahoma City, OK 73105 Contact: Bill Rulla

Hughes Markets 14005 Live Oak Avenue Irwindale, CA 91706 Contact: Bob Knowles

Hy-Vee Food Stores, Inc. 1801 Osceola Avenue Chariton, IA 50049 Contact: Monnie Trumbull

Ingles Markets 1560 Highway 60 East Black Mountain, NC 28711 Contact: Fred Griffith

Jewel Companies Management Corp. O'Hare Plaza 8725 West Higgins Road Chicago, IL 60631 Contact: Frank Eckstein

Kings Super Markets, Inc. 2 Dedrick Place West Caldwell, NJ 07006 Contact: Frank Milo

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Kwik Shop Inc. 734 East 4th Street Hutchinson, KS 67504-1927 Contact: Connie Phillips

Lucky Stores, Inc. 6565 Knott Avenue Buena Park, CA 90620 Contacts: Don Estephan, Bob Sloan

Majik Market (Owned by EZ Serve) 2550 North Loop West Houston, TX 77092 Contact: Ray Anderson

Marc's (Owned by MGI) 6857½ Southland Drive Middleburg Heights, OH 44130 Contact: Bruce Budinger

Mobil Oil Credit Corporation 11300 Corporate Avenue Lenexa, KS 66219-1385 Contact: Tom Randolph

National Super Markets, Inc. 6050 North Lindbergh Blvd. Hazelwood, MO 63042 Contact: Kim Ruhl Pathmark Supermarkets
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301 Blair Road
Woodbridge, NJ 07095
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Piggly Wiggly Carolina Co. 4407 Piggly Wiggly Drive Charleston, SC 29423 Contact: Mike Hawkins

Publix Supermarkets, Inc. P.O. Box 407 Lakeland, FL 33802 Contact: Earl Andrews

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QuikTrip Corporation 901 N. Mingo Road Tulsa, OK 74116 Contact: David L. Reed

Ralph's Grocery 1100 W. Artesia Compton, CA 90220 Contact: Kevin Davis

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Reiser Foods 5300 Richmond Road Bedford Heights, OH 44146 Contact: Al Van Luvender Rice Food Markets 5333 Gulfton Houston, TX 77081 Contact: Betty Weeks

Rite Aid Corporation 30 Hunter Lane Camp Hill, PA 17011 Contact: Bob Kostosky

Schnucks Markets Inc. 11420 Lackland Road St. Louis, MO 63146 Contact: Sue Kunstmann

Sellers Brothers 8011 Elvera Houston, TX 77012 Contact: Debbie Norwood

Shaw's Supermarkets P.O. Box 389 Stratham, NH 03885 Contact: William Adams

Shop 'N Save Hannaford Brothers Co. P.O. Box 1000 Portland, ME 04104 Contact: Laurel Tibbels

Shop 'N Save P.O. Box 220068 Kirkwood, MO 63122 Contact: Gary Thomas

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Smith Food and Drug Centers, Inc. 1550 South Redwood Road Salt Lake City, UT 84104 Contact: Todd Lillinguist

Stater Brothers Markets 21700 Barton Road Colton, CA 92324 Contact: Ed Crowell

Stop 'N Go National Convenience Stores P.O. Box 758 Houston, TX 77001 Contact: Greg Stults

Store 24 184 Riverview Road Waltham, MA 02154 Contact: Tom Jansinski

SuperFresh
707 Railroad Avenue
P.O. Box 68
Florence, NJ 08518
Contact: Dennis McConney

The Pantry 1801 Douglas Drive Sanford, NC 27330

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